



# SUFFOLK COUNTY

## Electric Vehicle Feasibility Study 2021



Sustainability



Renewable Energy



Green Fleet



Resiliency



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# ELECTRIC VEHICLE FEASIBILITY STUDY TEAM MEMBERS

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Christopher Berger	Chief Procurement Officer	Central Purchasing

## TERMS AND ABBREVIATIONS

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ATS	Automatic Transfer Switch
DPW	Department of Public Works
CSC	Climate Smart Communities
DCFC	Direct Current Fast Charging
EV	Electric Vehicle
EVSE	Electric Vehicle Supply Equipment
GHG	Greenhouse Gases
HEV	Hybrid Electric Vehicle
kW	Kilowatt
LIPA	Long Island Power Authority (Utility Company)
MPGe	Miles Per Gallon of Gasoline-Equivalent
NYS DEC ZEV	New York State Department of Environmental Conservation Zero-emission Vehicle
PEV	Plug-In Electric Vehicle
PSEG LI	Long Island Public Service Electric & Gas Company (Utility Company)
TCO	Total Cost of Ownership
ToU	Time-of-Use Tariff
CNG	Compressed Natural Gas
ZEV	Zero-emission Vehicle

# INTRODUCTION

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In response to the May 10, 2021 [Executive Order \(No. 1-2021\)](#), by Suffolk County Executive Steve Bellone, the Department of Public Works Divisions of Fleet Services, Buildings Design and Construction, Facilities Engineering and Transportation, in collaboration with Economic Development & Planning and various stakeholders, have created this feasibility study of converting all Suffolk County fleet vehicles, owned or leased, from fuel operated to electric vehicles including the necessary infrastructure, by 2030. This document includes the steps necessary to transition to a County-wide electric fleet including policies, challenges and an initial roadmap to support the transition to a completely electric vehicle fleet.

Suffolk County has a history of embracing visionary clean energy policies and programs. Over the past decade the County has been working toward lowering carbon emissions by upgrading its buildings, using and hosting solar photovoltaic (PV) projects, and greening the fleet. These efforts have earned Suffolk County designation as a New York State Clean Energy Community, awarded as a Silver Certified New York State Climate Smart Community and as a Gold-level SolSmart Community on the national level. As part of this continuous effort, Suffolk County has made efforts to green the 2000+ vehicle fleet with the introduction of biodiesel and diesel retrofits in heavy duty vehicles, hybrid-electric buses, and the purchase of dozens of CNG and hybrid-electric cars. At the same time, the County has been carefully reviewing its inventory and working to “right-size” the fleet.

The rate at which the County transitions its fleet towards EVs greatly depends on the type of technology and funds available. This document is written with the following assumptions:

- The higher the utilization rate of EVs, the greater return on investment on those EVs thus the intent is to transition the entire Fleet to EV.
- Today, available EVs might not be appropriate for all types of fleet vehicles, especially for vehicles that need to travel long distances or operate for long periods of time without operation, for heavy-duty vehicles due to lack of affordable battery technology. Technology availability for these types of vehicles will be routinely monitored and adjustments to the fleet will be made as technology becomes available.
- EVs, related products and resources will continue to improve; in cost, performance and development of emerging technologies and other advancements.
- Plans for EV infrastructure are conceptual and do not represent the full design details necessary to deploy charging equipment in service. Engineering design, including electrical and civil, will be required to prepare the necessary design drawings and calculations to support permitting, and ultimately construction, of charging stations. Actual costs will depend on numerous conditions at the time of implementation of each phase of conversion.

For these reasons, and given the desire for Suffolk County to remain responsive to the dynamic nature of the EV market, this document is considered to be a living document, to be updated on a regular basis to reflect changing circumstances (i.e. technology, costs of products, fuels, and services are constantly changing.)

***Therefore, estimates and approximate costs herewith are provided for comparison only and will evolve.***

## VISION & GOALS

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Reduce Suffolk County's carbon footprint



Increase EVs in the County Fleet by transitioning all vehicles to electric by 2030; subject to available technology



Invest in the infrastructure needed to support EVs and move to sustainable energy sources



Utilize shared services with other government agencies to promote EV initiatives regionally



Continue to support other renewable-powered outlets so electricity used to charge vehicles comes from cleaner sources





# BENEFITS OF AN ELECTRIC VEHICLE FLEET

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While electric vehicles are a newer technology there are clear and compelling benefits of transitioning to an electric vehicle fleet.

Below are some of the identified benefits:

- ✓ EVs have reduced emissions supporting improved air quality and improving public health.
- ✓ EVs have much lower GHG emissions than conventional vehicles.
- ✓ Cleaner roadways and parking lots for reduced contamination runoff (no oil, transmission, coolants in EVs).
- ✓ EVs have lower maintenance and fuel costs thus have a lower lifetime cost of ownership than conventional vehicles.
- ✓ Charging vehicles at night and during off-peak hours is beneficial to the utility grid and will be less expensive than charging during peak hours.
- ✓ The cost to charge an EV is less than the cost to fuel internal combustion vehicles\*.



To put it in perspective, to fuel an efficient car with gasoline costs between \$0.07-0.14 per mile, but charging an EV at home can cost as little as \$0.03-0.04 per mile. (Fuel cost for a 35 MPG car based on local gasoline prices, which fluctuated between \$2.46 and \$4.74 per gallon over the last 5 years) <sup>[17]</sup> It is important to note, Long Island electric rates are higher than the national average, however, PSEG-LI offers off-peak rates, which is an option for the County. Additionally, if DC Fast Chargers are utilized, the charges usually result in higher cost than if a Level 2 charger is used. While new tariffs are expected, including “time of use” tariffs that will encourage overnight charging, it is not known what will be available to the County for non-residential use.

\*The degree of savings will vary based on location, the source of the electricity, the time of day the vehicle is charged, and the type of charger used.

## CURRENT STATE

The Division of Fleet Services operates under the Department of Public Works. Fleet Services is responsible for the day-to-day oversight and management of the County fleet comprising 3,073 owned or leased active vehicles, 5 maintenance shops, 5 precinct shops, 19 fueling stations and 3 pool car locations. The County has implemented a fleet purchasing strategy to centralize the acquisition of vehicles. This helps standardize the fleet requirements and volume purchasing saves on costs. Annually, County departments, along with the Director of Fleet Services, evaluate the departmental assigned fleet to determine which vehicles need to be replaced in accordance with established County replacement policies. Evaluation includes identifying vehicles meeting the County established replacement criteria, or vehicles with excessive repair, maintenance, and/or operating costs and available data is utilized to assist in this effort. Through this process, approximately 275 vehicles are replaced each year.

**Overall Vehicle Status by Vehicle Type**

Vehicle Type	Total Active	More than 200 Miles Per Day	Avg. Purchased Each Year
Sedan – General Use	790	5	43
Sedan – Marked Patrol	269	0	4
SUV - General Use	558	4	86
SUV- Marked Patrol	267	0	77
Pick-Up - General Use	335	4	24
Pick-Up Marked Patrol	28	0	3
Vans - General Use	67	0	17
Motorcycles	29	0	4
Heavy Duty Vehicle	349	0	25
Bus – Large (<13 passengers)	180	-	15
Bus/Van (>12 passengers)	201	-	40
<b>TOTAL</b>	<b>3073</b>	<b>13</b>	<b>338</b>

**Vehicles by Fuel Type**

Vehicle Type	Electric (EV)	Hybrid Electric (HEV)	Fuel Operated
Sedan – General Use	0	62	790
Sedan - Marked Patrol	0	0	269
SUV- General Use	0	0	558
SUV- Marked Patrol	0	0	267
Pick-Up - General Use	0	0	335
Pick-Up Marked Patrol	0	0	28
Motorcycles	0	0	29
Heavy Duty Vehicle	0	0	349
Large Bus – Contract Agency	0	0	180
Paratransit Bus – Contract Agency	0	73	128
<b>TOTAL</b>	<b>0</b>	<b>135</b>	<b>2,993</b>

*Note: Non-Road Vehicle/Specialty include specialty vehicles and construction equipment not included.  
Marked patrol sedans are currently being phased out in the County.*

### Public Transit Electrification

The Suffolk County Department of Public Works (DPW) oversees Suffolk County Transit (SCT) with a network of 41 bus routes, serving 4.6 million customers and operating over 7.6 million miles annually. The division has 180 fixed route buses, 73 of which are hybrid and approximately 200 Paratransit buses.

New York State has identified Suffolk County as one of five suburban municipalities responsible for electrification, Suffolk County Transit (SCT) has begun the process of replacing public transit buses with electric models which have zero tailpipe emissions and could begin serving riders by late 2022. The County is assessing the six depots that currently house the fleet and is coordinating with PSEG LI on the Ronkonkoma and West Babylon depots that will house the first set of buses. In addition, Suffolk is embarking on a State-sponsored Countywide master plan to explore the infrastructure upgrades needed to support bus electrification. SCTs plan to electrify the fleet by 2035 has been updated to 2030 to meet the goals of [Executive Order \(NO. 1-2021\)](#).



## AVAILABLE TECHNOLOGY

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Compared to gasoline fueled vehicles, EVs use much less energy, can be powered by locally produced renewable electricity, can significantly improve local air quality, reduce greenhouse gas emissions and dramatically reduce fuel costs. Over recent years, the EV market in the United States has gone from a tiny niche market to a growing segment of the vehicle market. Nearly every major manufacturer now offers one or more models of battery electric vehicle or plug-in hybrid electric vehicle with many more planned in the coming years.

### About EVs

EVs utilize electric drivetrains to power the wheels of the vehicle, eliminating tailpipe emissions. The electricity is stored in onboard batteries. Rather than refueling at gas stations, plug-in EV batteries recharge at electrical outlets and through electric vehicle charging stations.<sup>[1]</sup>

### Availability of EVs

While the electrification of passenger vehicles is well underway, the decarbonization of heavy-duty trucks and public safety patrol vehicles has developmental challenges. The high energy consumption in combination with high daily driving ranges makes battery electric operation much more difficult than for passenger cars.<sup>[1]</sup> To this extent, Ford has developed a hybrid police patrol vehicle and is planning to release an all-electric police patrol SUV by 2025.<sup>18</sup> Ford is expected to offer an all-electric pickup truck for ordering in 2022. <sup>[19]</sup>



### Charging Stations

There are 3 standard charging levels used to charge EVs. All EVs can be charged with Level 1 and Level 2 stations. Level 3 chargers - also called DCFC or fast charging stations - are much more powerful than Level 1 and 2 stations, and charge an EV much faster. It is important to note that some vehicles cannot charge at Level 3 chargers. [\[2\]](#)

Level	Power (kW)	Approximate Charging Time (Empty Battery)
1	1	124 miles: +/- <u>20 hours</u> 249 miles: +/- <u>43 hours</u>
2	3 to 20, typically 6	124 miles: +/- <u>5 hours</u> 249 miles: +/- <u>11 hours</u>
3 (DCFC)	Typically 50, occasionally 20	124 miles: +/- <u>30 min</u> 249 miles: +/- <u>1 hour</u>

### Charging Station Software

There are various charging station management software solutions available based on the type of EVSE installed. These applications provide the ability to establish operational rules, track real-time transaction data and process payments. At this time there are several payment technology options for charging stations for both public and private operations. While typically universal, the types of payment available at the charging stations are dependent on the charging station management application selected.

### *Cashless Transactions*

EV vehicle charging station cashless payment functionality provides the ability for drivers to easily access the charging station while allowing Fleet Services to remotely monitor and manage cashless EV charging transactions via an EV management application. Current cashless transaction mediums include but are not limited to prepaid cards (Employee ID FOB Cards), mobile payments (Google/Apple Pay, credit cards) and QR codes.

In determining a charging station management application, it is recommended that the Department of Information Technology conduct a study to establish the technical needs of the EV operation. The study should consider networked availability at each location (network connectivity is required for real-time data access), reporting requirements, operational rules, ability to integrate with a variety of devices and software systems that are commonly part of an EV charging deployment (ex. EV chargers, electric load meters, micro-grid resources, vehicle telematics and the fleet management software.).

# ECONOMIC IMPACT & OPPORTUNITIES

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Sustainability, options and savings are the primary reasons to switch to electric vehicles. While the exact impact and savings is unknown at this time, significant environmental and financial benefits are expected. Below are identified areas of expected impact:

## Emissions

Carbon dioxide emissions from traditional vehicles contribute to greenhouse gases in the atmosphere and accelerate climate change. EVs do not release carbon dioxide into the atmosphere. By achieving its goal of transitioning the County fleet to EVs by 2030, the County could see indirect economic benefits as emission reductions will directly improve air quality in Suffolk County, reducing emergency and long-term health impacts.

## Reduction in Fueling Costs

Division of Fleet services manages and maintains 19 fueling stations across the County. The transition from gasoline and diesel fuel to electric will reduce the annual fueling costs for fuel purchase and fuel station maintenance. In addition, the transition to EVs will provide the ability to transition personnel and related resources currently utilized to support the fueling operation to support the electric fleet operation.

## Annual Fuel Costs

	Gasoline	Diesel	Total
2020	\$2,903,480	\$364,650	\$3,268,130*
2019	\$4,216,044	\$588,795	\$4,804,839
2018	\$4,579,295	\$672,826	\$5,252,121

*\*Budget impacted by COVID-19*

## Annual Fuel Station Maintenance Costs

	Total
2020	\$201,459*
2019	\$232,061
2018	\$249,907

*\*Budget impacted by COVID-19*

### Vehicle Maintenance Costs

A fuel operated vehicle has about 2,000 moving parts whereas an EV has less than 20 moving parts. Fewer moving parts means fewer things that require servicing which in turn means reduced maintenance costs. According to the U.S. Office of Energy Efficiency and Renewable Energy,

***“The estimated scheduled maintenance cost for a light-duty battery-electric vehicle (BEV) totals 6.1 cents per mile, while a conventional fuel operated vehicle totals 10.1 cents per mile. A BEV lacks an fuel operated vehicle’s engine oil, timing belt, oxygen sensor, spark plugs and more, and the maintenance costs associated with them.”<sup>[24]</sup>***

The following tables lists the current maintenance costs along with the potential maintenance, repair and replacement costs that will be eliminated with EVs:

### Annual Vehicle Maintenance Costs

	Parts and Labor Costs	Vendor Costs Maintenance Costs	Total
<b>2020</b>	\$3,496,385.50	\$2,071,951.37	\$5,568,336.87
<b>2019</b>	\$3,639,314.47	\$1,983,431.08	\$5,622,745.55
<b>2018</b>	\$3,500,088.46	\$2,334,266.80	\$5,834,355.26

Notes: Vendor total includes lease maintenance costs included in monthly lease payments.

### Examples of Vehicle Maintenance with Average Costs

Maintenance Component	Average Cost	Frequency
Oil change	\$25 - \$55	Every 3,000 – 5,000 miles
Engine repair/replacement	\$1,000 - \$9,000	Typically lasts the lifespan of the vehicle; however, a broken rod, damaged valve or oil leak can cause it to occur sooner
Tune up	\$150- \$850	Plugs, coils - primary police
Transmission repair/replacement	\$1,000 - \$5000	Typically lasts the lifespan of the vehicle; can occur if transmission fluid changes are neglected.

Note: Totals above reflect Small SUVs and Sedans

## Purchasing

The fleet procurement strategy determines the scope and budget of the charging projects. Analyzing the procurement of an EV requires taking into account several cost categories that are different from procuring a traditional fuel operated vehicle. These include the cost of electricity and the cost of charging stations.

The Department of Public Works Fleet Services Division manages the purchasing process for all County vehicles utilizing established department fleet operational and capital budget lines for purchases or lease of vehicles. The County fleet size is managed and maintained under an established vehicle replacement program and legislative fleet size based on each department's operational needs.

[Executive Order 1-2021](#) directs that this “plan should consider the possibility of cooperative procurement opportunities with other municipalities in light of Suffolk County’s shared services goals.” To this end, initial surveys of local government partners has revealed a strong interest from municipal partners in each town throughout Suffolk County in shared services or cooperative procurement opportunities, including but not limited to:

- Cooperative procurement of electric vehicles;
- A shared electric vehicle charging network;
- Workforce training for EV support activities.

Additionally, discussions with Westchester County and Nassau County provide more potential avenues for shared services and cooperative procurement on a broader, inter-county basis. Those discussions continue. Past performance indicates that cooperative procurement in other areas of purchasing have provided savings of between 10 percent and 85 percent depending on the material or services.

Budget considerations include, but are not limited to:






- Outside funding sources such as those offered through utility programs, the U.S. Department of Energy and New York State.
- The ratio of EVs to chargers needed
- EV readiness design at sites to prepare for future procurements
- Charging hardware and software needs including screens, payment, cord length, cord management, power management, connectivity (Wi-Fi and/or cellular), charging data access and management
- The energy level of charging required at each charging location.

## Cooperative Purchasing

Cooperative purchasing and shared services can assist with the transition by partnering with other government entities to obtain more favorable terms on electric vehicle purchases and leases. In addition through shared services local municipalities can benefit from cost saving opportunities through centralized fleet maintenance operations.

[New York State Vehicle Marketplace \(OGS\)](#) - The New York State Vehicle Marketplace offers state and local government entities the opportunity to purchase or lease electric vehicles from dealers under contract with the Office of General Services. Partnering with the State has the potential to offer a wider range of electric vehicle options and lower prices of zero emission vehicles on behalf of state agencies and local governments.

## Vehicle Price Comparison Examples:

	Fuel Vehicle		EV Models		
	2021 Toyota Prius (HYB) 	2021 Nissan Altima 	2021 Chevy Bolt 	2021 Nissan Leaf 	2021 Hyundai KONA 
Total Driving Range	588	518	259	215	258
Fuel Economy (MPGe)	56	32	118	111	100
Government Market Price	\$24,525	\$24,450	\$36,500	\$31,670	\$37,390
State Rebate	-	-	\$5,000	\$5,000	\$5,000
Est. Monthly Lease	\$319	\$319	\$519	\$447	\$534
<b>Purchase Total</b>	<b>\$24,525</b>	<b>\$24,450</b>	<b>\$31,500</b>	<b>\$26,670</b>	<b>\$32,390</b>

Note: Rebate included in above EV leasing total (rebate equates to \$83 per month savings)

<https://www.nyserda.ny.gov/all-programs/programs/drive-clean-rebate/how-it-works>

<https://www.cars.com/research/compare/?vehicles>

<https://www.fueleconomy.gov/feg>

## Potential Funding Sources

Prices for EVs, especially long-range passenger car models, are rapidly decreasing and are expected to be comparable to gasoline-powered cars as soon as 2025. (Reference BNEF 2018 forecast BEV prices (<https://about.bnef.com/electric-vehicle-outlook>) Currently purchase and lease incentives bridge the price gap and have been effective in driving demand for EVs. In addition to purchase incentives, lower operating costs are a key driver of EV adoption, saving many drivers \$1,000 per year or more.

## Potential Vehicle Funding Available

NYS DEC ZEV - Vehicles must be purchased or leased on or after March 1, 2020, and placed into municipal service at a dealership located in New York State. Plug-in hybrid, all-electric, and hydrogen fuel cell vehicles with a 50 to 100 mile electric range are eligible for a rebate of \$2,500; vehicles with a 101 to 200 mile electric range are eligible for a rebate of \$5,000; and vehicles with an electric range of 201 miles and over are eligible for a rebate of \$7,500. Municipalities may purchase and receive rebates for multiple vehicles. There is \$300,000 available in vehicle rebates and the current application period closes October 29, 2021 or whenever funds run out, whichever comes first. However, in recent years New York State has extended the program each year.

## Potential Infrastructure Funding Available:

1. NYS DEC ZEV - <sup>[25]</sup> Primarily for PUBLIC charging stations, but there may be an opportunity to seek partial PUBLIC use of stations as part of the application. According to the DEC ZEV program: All infrastructure funded through this program must be available primarily for public use; therefore the public use times must be longer than the County fleet charging times. The public would need access for a minimum of 13 hours and the County fleet charging could have a maximum of 11 hours to qualify. In 2021, A total of \$2,500,000 is available in this round on a first-come, first-served basis. The grants are available to municipalities that will install hydrogen filling station components or electric vehicle supply equipment (EVSE) that is Level 2 or direct current fast charge (DCFC). There is \$2,500,000 available in charging infrastructure rebates and the current application period closes October 29, 2021 or whenever funds run out, whichever comes first. Again, the program is likely to be extended into future years. Utility Make Ready funds may be combined with funds from this program, but PSEG LI's program will not be in place until January 2022 at the earliest.



2. PSEG LI Make Ready Program: [The EV Make Ready Program covers:](#)
  - Utility-owned equipment including step-down transformers, overhead service lines, utility meters, and other traditional distribution infrastructure,
  - customer-owned equipment including conductors, trenching, panels for stations, and other customer-side equipment.

The charging facilities would need to be open to the public 24/7 in order to qualify for the PSEG LI EV Make Ready incentive at 90% of construction costs. For private, workplace (or fleet) the projects would garner up to 50% of construction costs. NYSEDA Charge-Ready program: This is primarily for public charging stations, and would not be appropriate for most fleet vehicles. [\[20\]](#)

3. Federal - possible funding sources include:
  - Congestion Mitigation and Air Quality Improvement (CMAQ) Program
  - Low or No Emission Vehicle Program – 5339(c)
  - Title XVII Clean Energy Loan Guarantees
  - Surface Transportation Block Grant Program (STBG)
  - Infrastructure Bill

## INFRASTRUCTURE

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Charging infrastructure is required to support the electrical infrastructure for EVs. In addition to the installation of the charging stations, improvements to existing or installation of new electrical infrastructure including switchboard, service connections, etc. are required. Therefore, several factors should be considered for any Electric Vehicle Supply Equipment (EVSE) installation to ensure optimized use of the station and the most value from the investment.

### Source of Electrical Power

Installation of new electrical services that are independent of existing building electrical infrastructure is necessary for EVSE facilities exceeding (4) EVs. This decision is based on the Department of Public Works involvement in varying degrees of electrical-related projects in recent years, ranging from minor electrical repairs to major overhaul and replacement of electrical switchgear. It has been observed that some pre-1980's vintage electrical building infrastructure is approaching the end of its lifecycle, may be at risk of failure, or may no longer meet modern Code requirements. Installation of a large quantity of EVSE to an existing building would require extensive review of the building's electrical infrastructure, heavy modification to existing electrical switchgear, and likely cause unwarranted electrical stress to the existing electrical infrastructure in the form of increased electrical loads and increased harmonic voltage and current distortion (as discussed further below).

### Resiliency Plan

Power disruption or interruption may occur in the event of severe weather events, damage to and failure of utility equipment, or general utility work. As the current goal is to have an all electric fleet versus an electric hybrid fleet, charging operations should be protected from power supply interruptions using energy production from back-up generators. To eliminate potential environmental impacts from diesel powered generators and associated fuel tanks, natural gas or propane generators are recommended. It is recommended that each EVSE facility be supported by one natural gas or propane generator with associated appurtenances sized for 100% capacity (i.e., all chargers operating simultaneously).

### Handicapped Accessible Charge Stations

Handicapped accessible parking spaces associated with charge stations will be necessary in accordance with Suffolk County law and/or other Federal design criteria. Requirements should be well researched at the time of design and implemented to assure appropriate adherence.

### Electrical Utility Coordination and Support

For large scale charge station facilities, coordination with PSEG LI is imperative and may dictate the allowable capacity of the EVSE facility. A multitude of EVSE operating simultaneously will not only incur additional electrical loads on the utility distribution grid, but will also increase harmonic voltage and current distortions. Coordination with PSEG LI will be vital to determine available power, ensure proper operation, and protect the electrical distribution grid.

### Harmonic Voltage and Current Distortion

Charge stations purchased by Suffolk County shall adhere to the total harmonic distortion limits defined by the Institute of Electrical and Electronics Engineers (IEEE) Standard 519 or the most relevant engineering standard at the time of design.

Due to the electrical characteristics associated with power electronics, installation of a large-scale charge station facility can give rise to operating conditions that are not customary in traditional power systems. Such integration may even have adverse effects on the utility distribution grid if the installation is not carefully and systematically planned. Harmonic distortions can cause abnormal operation such as increased losses, reduced efficiency, temperature rise, and premature insulation and equipment failures both at local building systems and on the utility distribution grid.<sup>[21]</sup> Several scientific journal articles have raised awareness of this occurrence and engineering standards are currently in a state of revision to assure EV and EVSE manufacturers adhere to total harmonic distortion limits prescribed by IEEE standards.<sup>[22]</sup> Until such standards are revised or created, selection of EVSE shall be contingent upon a total harmonic distortion (THD) value of <5%, in accordance with IEEE Standard 519.<sup>[23]</sup>

### Charge Station Selection

Installation of Level 2 charge stations is recommended for all vehicles other than County Police Department vehicles and Heavy Equipment (Snow plows, dump trucks, etc.). Installation of Level 3 charge stations is recommended for SCPD vehicles and Heavy Equipment due to their need for minimal charge time and the potential for these vehicles to witness heavier loads on their onboard battery systems.

The New York State Energy Research and Development Authority (NYSERDA) maintains a list of charge stations qualifying for the 'Charge Ready NY rebate' which comprises over 80 models.<sup>[20]</sup> This list has been analyzed and the following additional qualifiers have been applied to form the basis of our recommendation. Equipment eligible for consideration must be:

- Included on NYSERDA's "Qualified Charging Equipment" list.
- Dual charging type & capable of splitting power between charging ports.
- Capable of network communication with an open protocol.
- Capable of accepting BOTH RFIDs and credit cards as payment.
- Energy Star certified.

The criteria above reduce the list of eligible equipment to a handful of Level 2 charging models that can be procured for installation and used throughout Suffolk County. It should be noted that while several Level 3 charging capable models exist, none currently meet the above criteria. Over time, as technologies mature, it is anticipated that additional manufacturers will become available to increase the pool of available suppliers.

## Electric Vehicle Supply Equipment (EVSE) Summary

In general, there will be two types of EVSE facilities. One type of facility will be small, support up to (4) EVs and will only be used for County fleet vehicles not requiring Level 3 charging. The second type of facility will be any system supporting more than (4) EVs.

All facilities with (4) EVs or less will be tied into a building's existing electrical infrastructure. Wire and conduit will be provided from the building to up to (2) charge stations, serving up to (4) EVs. Since this type of system will be tied to a building, there will only be backup generation available if the building already has an existing functional generator.

All facilities with greater than (4) EVs will be constructed independent of a building's existing electrical infrastructure. The exact equipment will vary from site to site, but in general the EVSE will consist of a new dedicated electrical service and meter from PSEG LI. This will be followed by a service disconnect switch that connects to an automatic transfer switch (ATS). A new gas or propane outdoor generator will also be tied into the ATS. In the event of a loss of normal utility power the generator will automatically start and provide power. Downstream of the ATS will be a panel board or switchgear to distribute power to each EVSE. The EVSE may require new dedicated concrete pads if the equipment cannot be installed on existing paved surfaces. The EVSE will require fencing to keep it secured and concrete wheel stops for vehicular traffic protection.

## Budgeting for EVSE Installations

Budgeting for multiple EVSE installations across Suffolk County facilities with different charging will be updated annually as EVs and EVSE continue to evolve and become more efficient. For the purposes of this report we have included the following data and assumptions:

- Level 2 and Level 3 EVSE installations and their respective locations will be allocated based on fleet size, data, and requirements provided by the Department of Public Works Fleet Services Division.
- All alternative sources of funding, such as rebates or grants, should be utilized when practical.
- Estimates are only as good as the current information available. Future values can be determined assuming an annual escalation rate of 4%. However, be advised that the recommended escalation rate can vary due to the volatile nature of material costs, as witnessed in 2020 and 2021.
- A full electrical service and backup generation buildout will be assumed for installation.
- EVSE quantities will be estimated based on one charge plug per vehicle
- EVSE have been selected and rated to maximize charge rates and to allow EVs at the site to charge simultaneously.
- All EVSE are assumed to be installed in or in the vicinity of existing parking lots.
- Other future cost considerations:
  - Additional site lighting.
  - Modification or addition to parking lot areas.
  - Electric utility fees.
  - Design consultant fees.

A recommended approach to design and construct would be to assume a phased installation over the next ten years. For example, the first phase of construction can include North County Complex, H. Lee Dennison Complex, Yaphank County Center, and Riverhead County Center and can be executed over the course of 3 years.

Ongoing operating costs, not including electrical use, would include routine preventative maintenance of backup generators and replacement of damaged or faulty EVSE.

# CHALLENGES AND RECOMMENDATIONS

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Modern electric vehicles were introduced in 2010 and early market growth has been impressive to date, however, several barriers exist that prevent the immediate adoption of EV technology for the County fleet. By better understanding the potential obstacles, the County can identify the best approach to adopt an EV fleet in Suffolk County.

## Long Term Commitment

**Challenge:** Long term commitment is necessary to ensure the success of this program. EV fleet savings is realized over time, with a return on investment upwards to 20 years. Without a long-term commitment the program will most likely not reap the intended benefits. Impacted stakeholders include front line employees including top level senior management. Every stakeholder needs to be engaged in the transition. Senior management must understand the challenges involved, be supportive of the implementation team and be prepared for the initial expense to see substantial results; both fiscally and environmentally.

**Recommendation:** In order to achieve a successful transition from fuel operation to EV, it is recommended that the Administration support a phased comprehensive plan to electrify the County fleet. This should be a modular approach to fleet electrification that allows for continuous improvements with the ability to adapt to the ever changing advances in technology.

## Cost/Budgeting

While the costs associated with the conversion/transformation of the County fleet from fuel operation to EV are estimated in this feasibility study, the actual costs will not be realized until the County procures all associated components. The estimates in this study are reflective of the pandemic prices where some material costs doubled. Factors such as labor, raw materials (electric wire), and available grant funding and shared services will be the driving forces on the final cost to electrify the County fleet. Much of the overall cost now is temporarily higher due to the suggestion of installing backup generators. This is something that could be done in a phased approach to help defer some initial startup costs.

**Challenge:** Though electric vehicles offer significant fuel and maintenance savings compared with non-electric vehicles, the up-front cost of an EV remains an obstacle, as all new technology comes at a price. Increased electricity demand and consumption resulting from EV charging may require costly upgrades to the electrical distribution system, including, but not limited to, new transformers. The cost of the new innovation must be part of the calculation before moving forward. These costs should include but not be limited to;

- Total Capital Costs: The cost of purchasing (or leasing) the vehicles and charging stations
- Total O&M Costs: The total 10-year lifecycle costs for maintenance of the fleet
- Lifecycle Costs: The summation of Total Capital Costs and Total O&M Costs
- Cost Effectiveness: the comparison of gas vs electric

**Recommendation:** A Cost Benefit Analysis that incorporates monetized benefits covering environmental and economic changes from the current fleet operation as compared to the proposed fleet conversion scenarios over a 10 year period (2021-2030) should be completed. The analysis shall include measures of the value of the benefits and costs to all stakeholders, and shall evaluate and compare alternative investment decisions based on a set of quantified benefits, costs, as well as avoided costs. The analysis results will identify

the greatest net benefits compared to net costs to justify public investment for the return on investment that will not be realized for many years to come.

#### Property Ownership

**Challenge:** The County partners with various contract agencies who provide public service utilizing County-owned vehicles that are maintained on private property and/or store County vehicles on leased property. Examples include Suffolk County Transit which maintains County-owned vehicles as part of their contracted services on privately owned property and the Department of Health Service's Great River location which operates and manages a car pool on leased property. These scenarios present a challenge for the ability to install fixed infrastructure and enforce policies to support the EV fleet at these particular locations.

**Recommendation:** Considerations for deployment of the EVSEs goes beyond just who owns the property; long-term plans for a facility must be part of the planning process. EVSEs can be expensive and difficult to install. In order to maximize the return on the investment in the infrastructure, an assessment should be conducted to determine how long the EVSEs will be used at each location. The assessment should include items such as:

- What is the term of the lease and likelihood of the lease being renewed?
- Will the property owner allow charging units to be installed on the property and/or help offset some of the installation costs?
- What happens to the charging stations when and if the lease expires without renewal or is terminated?
- Who pays for the electricity, how is it measured, and how is it paid for?
- Will installing charging stations change the lease rate or term?
- Coordinate with the Facilities working group regarding new facilities in the Facilities Master Plan

#### Public Safety Patrol Requirements

**Challenge:** Public Safety vehicles often have more advanced performance, customization or fortification requirements than a general fleet vehicle. Potential challenges to consider include:

- Availability of Police rated patrol vehicles.
- How will sector car relief points be handled?
- Need for vehicles that support rapid charge or mobile charge on scene at long term incidents.
- Potential need to increase fleet to account for the need to rotate vehicles for charging.
- Upfitting needs and certified upfitting vendors
- Vehicles for prisoner transfers to upstate facilities

**Recommendation:** Conduct a needs assessment of public safety vehicles to identify the minimum requirements and compare alternative EV options. Once needs have been identified, establish a phased plan to incorporate patrol vehicles into the fleet as the technology becomes available.

#### Commuter Vehicles

**Challenge:** There are County employees who are currently assigned commuter vehicles. Depending on the number of county EVSE available and the charging public sharing policy, the commuter vehicle charging capabilities could be limited.



**Recommendation:** Update the current fleet operational policy to include standard language on commuter vehicle assignments (standardize assignment criteria, type of vehicle utilized for commuting, charging requirements and terms of assignment). Home charging of commuter vehicles should be considered.

#### Charging Infrastructure

**Challenge:** Access to convenient and easily accessible charging infrastructure is critical to supporting electrification of the County fleet.

**Recommendation:** Conduct an evaluation of options for broad phased deployment of charging infrastructure across the County based on accessibility, available and proposed infrastructure and County operational needs.

#### Source and Availability of Electrical Power

**Challenge:** Current electrical infrastructure was not designed to support an EV fleet. A multitude of charge stations operating simultaneously will not only incur additional electrical loads on the utility distribution grid that must be addressed, but will also increase harmonic voltage and current distortions. The phased electrical infrastructure is currently limited by the existing PSEG LI grid network.

**Recommendation:** For large scale charge station facilities, coordination with PSEG LI is imperative. Coordination with PSEG LI will be vital to assure proper operation and protection of the electrical distribution grid. A detailed infrastructure plan should be developed to identify:

- Is there enough power at this location for the number of vehicles planned?
- Will a service panel upgrade be required?
- Can this location be supported by a renewable power source?
- Are separate utility services for public charging stations required?

#### Maintenance

**Challenge:** Generally, EVs require less routine maintenance than fuel operated vehicles. Vehicles will still need periodic inspections to ensure that brakes, tires, suspension, and overall vehicle safety meets the County's standards. Training for mechanics will be required to address how EVs are built and how to access EV components. Additionally, there will come a time when a driver of an EV will run out of battery power which will require some type of mobile fast charging unit to avoid costly tows.

**Recommendation:** Adjustments need to be made to the County garages, equipment, tools and maintenance programs to support the shift in fleet maintenance needs. Preparation for and training in operating portable charging unit(s) should be made. Battery life should be considered when calculating the extended cost of ownership and maintenance needs, as all batteries eventually wear out and must be replaced.

#### Training & Staffing

**Challenge:** EVs are much more complex than traditional fuel operated vehicles. Safety risks for mechanics who are not trained in the complexities of electric vehicles could become an issue for the mechanic as well as potential damage to the vehicles. Current Auto Mechanics that typically handle gas and diesel powered vehicles are not skilled in EV technology to perform complex technical diagnoses.

**Recommendation:** Create an ongoing EV Maintenance Training Program. Investment in time, training and resources to train maintenance personnel on the EV fleet is paramount. There should be a plan established to certify maintenance personnel on:

- Safety - Training in working on battery apparatus is necessary, including protective equipment such as insulated tools and high-voltage gloves.
- A new career ladder series should be developed for an Automotive Tech 1, 2, 3. This tech series will require mechanics to have knowledge of the new demands of EV diagnosis and repair. Tesla has developed a partnership with Community Colleges to develop and hire these mechanics.
- Mechanics should take training courses to attain certification in EV repairs.
- Tooling- Training on recommended tools and equipment that could include insulation meters and resistance meters used to detect problems within motor generator units.
- Technology - Advanced features in all new cars, such as blind spot detection, emergency braking and adaptive cruise control, are complex and require specialized training.

### Emergency Operations

**Challenge:** During an emergency event, reliance on electric vehicles is greatly reduced without proper backup energy sources available. Interruption of electrical power from the electrical distribution grid is possible and likely to occur in varying degrees of severity. Examples of this include failure of utility equipment, prolonged electrical outages due to seasonal storms and hurricanes, and the rare occurrence of electrical utility work that requires a portion of the grid or a circuit to be de-energized.

**Recommendation:** Suffolk County should strongly consider backup generation for charge station facilities where use of fleet vehicles and equipment is vital to Suffolk County operations. Backup generation should be considered to maintain consistency and ensure that daily operations are not interrupted. If available and practical, a generator that operates on natural gas should be selected. Installation of large numbers of diesel oil tanks to power backup generators is not recommended due to the permitting, emissions, and potential environmental risk associated with underground fuel tanks.

### Vehicle Range

**Challenge:** Electric vehicles have a significant lower mileage range than their fuel operated counterparts. The average EV range is about 200 miles.

**Recommendation:** Deployment of EVs should be phased-in based on typical daily range as a primary variable, with vehicles with longer range averages should be introduced in later phases. This will provide time for the technology to catch up to the needs. Additionally, Extended Range Electric Vehicles (EREV) should be considered to support operational needs. EREVs have a larger battery than a Plug-In Hybrid Electric Vehicles (PHEV) for longer EV range, and switch between engine and electric drive functions differently. For the purpose of this document, EREVs are included as part of the PHEV family of vehicles.

There are several factors that impact electric mode range so planning needs to take those factors into consideration.

- Weather – Battery-operated vehicles are influenced more by weather conditions than conventional vehicles, low temperatures will cause a greater drain on batteries.
- Overloading – carrying unnecessary equipment increases the overall vehicle weight and reduces range.
- Speed – Excessive speed in highway driving will reduce EV range.

- Driver Behavior – Aggressive driver behavior such as speeding, high-acceleration starts and late braking have a negative impact on range.

#### Utility Rates and Utility Demand Charges

**Challenge:** The current utility infrastructure at County facilities as well as the local utility grid may not be able to accommodate the increase in load necessary to support the EV fleet. Electric vehicles can contribute to high demand on the electrical grid when many are charging at the same time. During periods of high demand, electrical utilities turn to less efficient power plants for additional power, in turn causing more pollution.

**Recommendation:** Electrifying transportation will increase demand on the grid thus it is imperative to identify current and expected grid availability to support this initiative. To avoid or minimize distribution upgrade costs, the County should work with the utility company, PSEG LI, to identify and develop potential charging sites with sufficient capacity to accommodate new EV loads. In addition, it is critical that utilities and regulators ensure that rates for EV charging reflect grid conditions.

## PHASED IMPLEMENTATION

It is important to take into account the nature of use of each vehicle, daily distances and usage schedule, the origin and destination of the trips they make and their charging requirements. A phased approach allows for the County to adequately pilot and assess the positive impact of electric vehicles, provides for mid-course adjustments, and provides room for expanding budgets and infrastructure to support the ultimate goal of a full Electric County Fleet. This study recommends implementation of the electric fleet in four phases: Discovery Phase, short-term (0-2 years), mid-term (2-5 years), and long-term (5-10 years) intervals. A phased approach will reduce negative impact on operations, be highly visible to residents, and make good financial sense.

Criteria selection of vehicles by phase:

#### Short-Term

- General Use vehicles that return to County property overnight
- Vehicles that typically travel fewer miles in a day than the range of the fully-charged EV
- Vehicles equipped with plug-in technology

#### Mid-term

- High daily mileage vehicles assigned to locations that are at or near County charging stations.
- General use vehicles that have reached their end of life

#### Long-Term

- Vehicles with specialized equipment where electric technology is not yet available or feasible
- High mileage vehicles with assigned swap vehicle or batteries

#### Timeline

Phase	Recommendation
Discovery Phase	<ul style="list-style-type: none"> <li>● Review existing information relevant to EVs and charging infrastructure, including building codes, charging locations, traffic codes, department plans, best practices, etc.</li> <li>● Identify partnerships (utilities, local governments, education agencies, etc.)</li> <li>● Needs analysis</li> </ul>

	<ul style="list-style-type: none"> <li>• Develop EV stakeholder and advisory committee</li> </ul>
Short-Term (0-2 Years)	<ul style="list-style-type: none"> <li>• Begin planning for EV fleet transition (site plans, permits, electrical plans, etc.)</li> <li>• Issue EV purchasing bid for sedans</li> <li>• Prioritize installing EV infrastructure to provide the most adequate County coverage within a 50-mile radius</li> <li>• Transition County Pool Vehicles to EV</li> <li>• Transition Public Safety Non-Patrol Fleet</li> <li>• Conduct Transit Bus EV Pilot</li> <li>• Transition leased vehicles to EV</li> </ul>
Mid-term (2–5 years)	<ul style="list-style-type: none"> <li>• Transition Bus Fleet to EV</li> <li>• Transition Sheriff's Department to EV</li> <li>• Transition Probation Department to EV</li> <li>• Transition Department of Fire Rescue and Emergency Services to EV</li> <li>• Transition Police Department Non-Patrol Vehicles to EV</li> </ul>
Long-term (5–10 years)	<ul style="list-style-type: none"> <li>• Transition Heavy Equipment to EV</li> <li>• Transition Police Department Highway Patrol to EV</li> </ul>

#### Prioritization of EVSE Sites

In addition to a phased approach for the deployment of EVs into the fleet, the installation of charging stations should be prioritized and phased-in as well. A number of factors influence charging station installation, viability and priority. These factors include but are not limited to, available electrical service, accessibility, cost, network availability and operational use. Based on these factors, this table identifies possible suitable sites for charging station installations in priority order for Phase 1. The selection process included several variables such as geographic location, accessibility, available infrastructure and operational needs.

Rank	Possible Site	Address	Use
1	DPW Yaphank Complex	355 Yaphank Avenue, Yaphank	Pool Cars/County/Public
2	H. Lee Dennison	100 Veterans Memorial Hwy, Hauppauge	Pool Cars/County/Public
3	North County Complex	Veteran's Highway, Hauppauge	Pool Cars/County/Public
4	Riverhead County Complex	210 Center Dr S, Riverhead	Pool Cars/County/Public

# PARTNERSHIPS

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In order to be successful the County will need to partner with local, regional, and state stakeholders.

## Partnerships

The SuffolkShare partnership was created in 2017 following passage of the New York State law mandating shared services panels in all counties throughout the state, excluding New York City. SuffolkShare currently includes 111 towns, villages, school districts, library districts, fire districts and a water district, plus Suffolk County government. In the 2021 Suffolk Share annual plan, adopted unanimously by member local governments and districts, there is an agreement as follows:

***“Multi-year planning and discussion of cooperative procurement of Electric Vehicles and EV Charging Stations.”***

This agreement is part of a larger shared services program promoting energy efficiency. As part of this program, local governments were surveyed as to their willingness to participate in a shared services program around electric vehicles. These surveys found that:

- Thirty-eight public library districts stated their interest in participating in a shared electric vehicle charging network with Suffolk County;
- Nine local governments, including three towns, two villages, two school districts and library districts indicated an interest in one or more of the following: cooperative procurement of electric vehicles (buying or leasing) a shared electric vehicle charging network; workforce training in maintenance and repair of electric vehicles and infrastructure.

Suffolk County continues to discuss potential partnerships in electric vehicle procurement, a shared charging network, and other related issues with Nassau County and Westchester County. Acquisition of goods and services in partnership with other local governments may have significant impact toward reducing cost. For example, in 2020, group procurements of personal protective equipment by Suffolk County in partnership with other local governments led to pricing that was as much as 80 percent lower on some items compared with pricing by other local governments nationally, when evaluated against pricing statistics maintained by the firm GovBuy. A 2018 cooperative procurement of police vehicles by Suffolk County, in partnership with Nassau County and Westchester County, led to an aggregate savings of more than \$600,000 against list pricing on the vehicles and accessory equipment. Shared services and procurement, including participation in a shared charging network, is a potential avenue to reduce cost-of-acquisition for vehicles and related equipment, and reduce ongoing costs associated with adoption of electric vehicles.

Additionally:

PSEG-LI and LIPA will support smart grid operations for EVs; will increase renewable electricity for EV charging; and will provide incentives to the public. These programs are evaluated annually and have been expanding steadily in recent years.

Western Suffolk BOCES, a SuffolkShare partner, is working with Suffolk County in the development of a workforce training program in EV/infrastructure repair and maintenance. By centralizing training, the County and SuffolkShare partners can realize additional savings.



## PROGRESS TRACKING AND ADJUSTMENTS

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As progress is made towards the County's goal of an EV fleet, it is imperative to continually revisit both progress and challenges and make adjustments as necessary. Through this effort it is important to establish, early on, tracking needs and ensure access to accurate utilization data in order for management to make informed decisions on adjustments, where and when to expand charging points and deploy additional EVs.

### Identified EV Fleet Performance Metrics

- Total Fuel Usage over time
- Percentage of EVSE to total EV Fleet
- Auxiliary Loads (in kWh)
- Percentage of EV fleet to Non-EV fleet
- Percentage of EVs deployed over time
- Electric Costs
- Total kWh Consumed
- Maintenance Costs
- Parts Costs
- Fuel economy per vehicle (miles per)
- Cost Per Mile
- Idling time

On a periodic basis, progress and goals, technology availability, best practices and regional charging station availability should be reassessed. Because the EV technology is rapidly changing, it is recommended that there be a regular review with revisions conducted to align with current needs and available technologies.

## POLICIES

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With the introduction of EVs into the County fleet, policies must be updated and implemented to account for both EVs and conventional vehicles to address common issues. As new technology is introduced, a number of policy and procedure questions will arise as soon as the first charging station is turned on. Organizational policies need to be developed that explain the goals of the EV program and establish how the County plans to deploy, expand and manage the program. Procedures will also need to be developed to outline to operators of vehicles and EVSEs how to safely use the new equipment. Regular training on the policies and procedures should be required to all operators of vehicles and charging stations.

### Recommended policies Include:

- Fleet Purchasing Standard
- Electric Fleet Operational Policy (revise SOP)
- Usage Policy - Speeding, Idling, GPS, Assignment
- Commuter Charging Policy
- Charging Station Policy & EVSE Management
- Fleet Maintenance Policy
- Employees Vehicle Usage Policy
- Public Vehicle Charging Policy
- Enforcement, Signage and ADA Compliance
- Leased Property Charging Station Policy
- Load/Grid Demand Reduction Policy
- Resiliency Policy

# ROADMAP FORWARD

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The overall goal of the EV Roadmap is to achieve the County Executives vision of emission-free transportation by 2030. To put Suffolk County on the path towards fleet electrification, seven focus areas were identified to eliminate barriers to adoption and bring about transformative change. It is important to note that the list below, which summarizes key focus areas of the EV Roadmap, is not ordered by priority or potential impact on EV adoption. Many of these key focus areas will need to be periodically assessed to adjust to the rapidly evolving EV landscape.

## EV Roadmap's Key Focus Areas:

- Phased Deployment of EVs and EVSEs
- Update and Draft New Fleet Policies and Procedures
- Right Sizing the County Fleet
- Right Sizing County Facilities
- Partnership with Utility Companies
- Leveraging Incentives to Promote Equitable, Affordable EV Adoption
- Shared Services and Procurement

Competing needs for funding, incentives for vehicle purchases, and infrastructure development will require strategic planning to optimize the return on dollars spent and to ensure all available practical grants and funding programs are incorporated into the Roadmap. The transition from fuel vehicles to EVs raises a variety of opportunities and challenges, including developing adequate charging infrastructure to meet charging needs, addressing increased electricity demand, maximizing the potential for efficient use of the electric grid in order to lower electric rates, and ensuring that Suffolk County achieves the full financial and environmental return on investment.

## SUMMARY

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It is clear, electric vehicles can save money through significantly lower operating costs, elimination of harmful tailpipe emissions, and greatly reduced greenhouse gases. However, the resources and steep upfront costs to update and install the necessary infrastructure to support an EV fleet greatly increases the time required to achieve a return on investment and poses several challenges that must be overcome. In addition, as the electric vehicle market continues to evolve and technology advances, demand markets shift and global energy concerns need to be addressed as they are realized.

Rather than focusing on the initial cost for implementation, the team focused on the long-term, economic viability over the fleet asset's life-cycle and environmental impacts. The acquisition of an asset is only part of the total cost of ownership to take into account when weighing the benefit cost vs. 'status quo' scenarios. Depreciation, interest, maintenance, repairs, fuel (power) and downtime are examples of life cycle costs that impact an asset's net value and provide the big picture of the value of a transition to an EV Fleet. At the same time, the County will realize savings in gas purchases, maintenance, and other costs of conventional fuel vehicles.

It is recommended that EV fleet transition follow a phased implementation approach by replacing fuel operated vehicles at the optimum time, resulting in more resources to invest in available EV technology. In effect, this approach will provide the ability to pilot EVs in day to day operations while continuing to utilize current assets during their peak use, decommissioning assets at the optimal time as well as adjusting the overall plan as the new industry advances.

The rate at which the County chooses to transition the fleet towards electric vehicles depends on the driving objective of the conversion, as well as financial and technical constraints.

# DEFINITIONS

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Electric Vehicle (EV) - are powered only by one or more electric motors. They receive electricity by plugging into the grid, and store it in batteries. They consume no petroleum-based fuel while driving and produce no tailpipe emissions.

Electric Vehicle Supply Equipment (EVSE) - delivers electrical energy from an electricity source to charge an EVs batteries. It communicates with the EV to ensure that an appropriate and safe flow of electricity is supplied.

Fuel operated- generate mechanical power by burning a liquid fuel (such as gasoline, diesel, or biofuels) or a gaseous fuel (such as compressed natural gas). They are the dominant power source used in on-road vehicles today.

Heavy Duty Vehicle - on-highway vehicle with a gross vehicle weight rating of 10,000 pounds or more

Hybrid Electric Vehicles (HEVs) - combine a fuel operated or other propulsion source with batteries, regenerative braking, and an electric motor to provide high fuel economy. They rely on a petroleum based or alternative fuel for power and are not plugged in to charge. HEV batteries are charged by the fuel operated or other propulsion source and during regenerative braking.

Load Management- Load management is the practice of minimizing charging during the most expensive times of day and at times when a facility is most likely to incur demand charges.

Medium Duty Vehicle -passenger vehicle with a gross vehicle weight rating more than 8,500 lbs GVWR but less than 10,000 pounds

MPGe- This abbreviation stands for “miles per gallon of gasoline-equivalent. It measures the fuel efficiency of vehicles that run on non-liquid fuels, such as hybrid and electric models. This is a measure of the average distance traveled per unit of energy consumed.

Plug-In Electric Vehicles (PEVs) derive all or part of their power from electricity supplied by the electric grid. They include EVs and PHEVs.

Plug-In Hybrid Electric Vehicles (PHEVs)- use batteries to power an electric motor, plug into the electric grid to charge, and use a petroleum based or alternative fuel to power an fuel operated or other propulsion source.

Total Cost of Ownership (TCO)- is defined as the overall cost for a particular vehicle including acquiring and operating the vehicle over an estimated useful term, based upon mileage or age of vehicles.

Time-of-use tariff (ToU)- incentives to shift energy usage to off-peak hours, providing the ability for utilities to use cleaner and more affordable power sources and reduce utility costs.

# RESOURCES

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2. <https://chargehub.com/en/electric-car-charging-guide.html>
3. Chris Harto. Electric Vehicle Ownership Costs: Today's Electric Vehicles Offer Big Savings for Consumers. October 2020. Consumer Reports. Downloaded from <https://advocacy.consumerreports.org/wp-content/uploads/2020/10/EV-Ownership-Cost-Final-Report-1.pdf>
4. [U.S. Department of Energy Plug-In Electric Vehicle Handbook for Fleet Managers](#)
5. [National Renewable Energy Laboratory. Foothill Transit Battery Electric Bus Demonstration Results.](#)
6. [9 U.S. DOE. Emissions from Hybrid and EVs.](#)
7. [New Energy Outlook \(NEO\) Bloomberg New Energy Finance's annual long-term view](#)
8. [Alternative Fuels Data Center](#)
9. [Qualified Charging Equipment and Networks](#)
10. [Grant Funding for Municipalities Climate Smart Communities Grant Program Open](#)
11. [Drive Change. Drive Electric Vehicles Listing](#)
12. [DOE \(2017\). "Implementing Workplace Charging Within Federal Agencies](#)
13. <https://www.epa.gov/ghgemissions/sources-greenhouse-gas-emissions>
14. <https://www.geotab.com/blog/ev-range/>
15. NYS DEC ZEV - [https://www.dec.ny.gov/docs/administration\\_pdf/21zevinrfa2.pdf](https://www.dec.ny.gov/docs/administration_pdf/21zevinrfa2.pdf)
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25. [https://www.dec.ny.gov/docs/administration\\_pdf/21zevinrfa2.pdf](https://www.dec.ny.gov/docs/administration_pdf/21zevinrfa2.pdf)
26. [https://afdc.energy.gov/vehicles/electric\\_emissions.html](https://afdc.energy.gov/vehicles/electric_emissions.html)



## APPENDIX 1- EV MODELS CURRENTLY AVAILABLE

Make/Model	PHEV/BEV	Range	MSRP	\$/Mile of Range	Battery (kWh)	\$/kWh	Miles/kWh
Audi A8 L 60 TFSI e quattro tiptronic	PHEV	17	\$95,900	\$5,641	14	\$6,801	1.21
Audi e-tron	BEV	222	\$65,900	\$297	95	\$694	2.34
Audi e-tron Sportback	BEV	218	\$69,100	\$317	95	\$727	2.29
Audi Q5	PHEV	20	\$52,900	\$2,645	14	\$3,779	1.43
Bentley Bentayga Hybrid	PHEV	18	\$156,900	\$8,717	13	\$12,069	1.38
BMW 330e	PHEV	22	\$44,550	\$2,025	12	\$3,713	1.83
BMW 530e	PHEV	30	\$52,395	\$1,747	12	\$4,366	2.50
BMW 740e xDrive	PHEV	28	\$90,095	\$3,218	9	\$10,011	3.11
BMW i3	BEV	153	\$44,450	\$291	42	\$1,058	3.64
BMW X3 xDrive30e	PHEV	17	\$49,600	\$2,918	12	\$4,133	1.42
BMW X5 xDrive 40e	PHEV	31	\$65,400	\$2,110	17	\$3,825	1.81
Chevrolet Bolt EV	BEV	259	\$36,620	\$141	60	\$610	4.32
Chrysler Pacifica Hybrid	PHEV	33	\$41,995	\$1,273	16	\$2,625	2.06
Ford Mustang Mach-E California Route 1	BEV	305	\$49,800	\$163	88	\$566	3.47
Ford Mustang Mach-E Premium	BEV	230	\$47,000	\$204	68	\$691	3.38
Ford Mustang Mach-E Select	BEV	230	\$42,895	\$187	68	\$631	3.38
Honda Clarity PHEV	PHEV	47	\$33,400	\$711	17	\$1,965	2.76
Hyundai IONIQ Electric	BEV	170	\$33,045	\$194	38	\$870	4.47
Hyundai IONIQ PHEV	PHEV	29	\$24,950	\$860	9	\$2,772	3.22
Hyundai Kona Electric	BEV	258	\$36,450	\$141	64	\$570	4.03
Jaguar I-PACE	BEV	234	\$69,500	\$297	90	\$772	2.60
Jeep Wrangler 4xe	PHEV	21	\$47,995	\$2,285	17	\$2,774	1.21
Karma Revero GT	PHEV	61	\$144,800	\$2,374	28	\$5,171	2.18
Kia Niro Electric	BEV	239	\$39,990	\$167	64	\$625	3.73
Kia Niro PHEV	PHEV	26	\$27,900	\$1,073	9	\$3,100	2.89
Kia Optima Plug-In Hybrid	PHEV	29	\$35,210	\$1,214	10	\$3,521	2.90
Land Rover Range Rover PHEV	PHEV	19	\$95,950	\$5,050	13	\$7,324	1.45
Land Rover Range Rover Sport PHEV	PHEV	19	\$79,000	\$4,158	13	\$6,031	1.45
Lincoln Aviator Grand Touring	PHEV	21	\$69,895	\$3,328	14	\$5,139	1.54
Mercedes GLC 350e	PHEV	15	\$49,990	\$3,333	9	\$5,554	1.67
Mini Cooper S E Countryman All4	PHEV	12	\$36,800	\$3,067	8	\$4,600	1.50
Mini Cooper SE Hardtop 2 door	BEV	110	\$30,750	\$280	33	\$932	3.33
Mitsubishi Outlander PHEV	PHEV	22	\$34,595	\$1,573	14	\$2,471	1.57
Nissan LEAF S	BEV	150	\$29,990	\$200	40	\$750	3.75
Nissan LEAF S PLUS	BEV	226	\$36,550	\$162	62	\$590	3.65
Polestar 1	PHEV	65	\$165,500	\$2,546	34	\$4,868	1.91
Polestar 2	BEV	233	\$61,200	\$263	78	\$785	2.99
Porsche Cayenne S E-Hybrid	PHEV	14	\$79,900	\$5,707	11	\$7,264	1.27
Porsche Panamera E-Hybrid	PHEV	16	\$99,600	\$6,225	11	\$9,055	1.45
Porsche Taycan	BEV	201	\$103,800	\$516	79	\$1,311	2.54
Subaru Crosstrek Hybrid (PHEV)	PHEV	17	\$35,970	\$2,116	9	\$3,997	1.89
Tesla Model 3 Long Range	BEV	353	\$46,990	\$133	78	\$602	4.53
Tesla Model 3 Performance	BEV	315	\$55,990	\$178	78	\$718	4.04
Tesla Model 3 Standard Range Plus	BEV	263	\$39,490	\$150	55	\$718	4.78
Tesla Model S Long Range	BEV	412	\$79,990	\$194	100	\$800	4.12
Tesla Model S Performance	BEV	387	\$91,990	\$238	100	\$920	3.87
Tesla Model X Long Range	BEV	371	\$79,990	\$216	100	\$800	3.71
Tesla Model X Performance	BEV	341	\$99,990	\$293	100	\$1,000	3.41
Tesla Model Y Long Range	BEV	326	\$49,990	\$153	75	\$667	4.35

Tesla Model Y Performance	BEV	303	\$60,990	\$201	75	\$813	4.04
Toyota Prius Prime	PHEV	25	\$27,100	\$1,084	9	\$3,011	2.78
Toyota RAV4 Prime	PHEV	42	\$38,100	\$907	18	\$2,105	2.32
Volvo S90 T8 PHEV	PHEV	21	\$64,645	\$3,078	10	\$6,465	2.10
Volvo XC40 AWD BEV	BEV	208	\$53,990	\$260	78	\$692	2.67
Volvo XC60 T8 PHEV	PHEV	18	\$53,895	\$2,994	10	\$5,390	1.80
Volvo XC90 PHEV	PHEV	17	\$67,800	\$3,988	10	\$6,780	1.70

<https://evadoption.com/ev-models/>

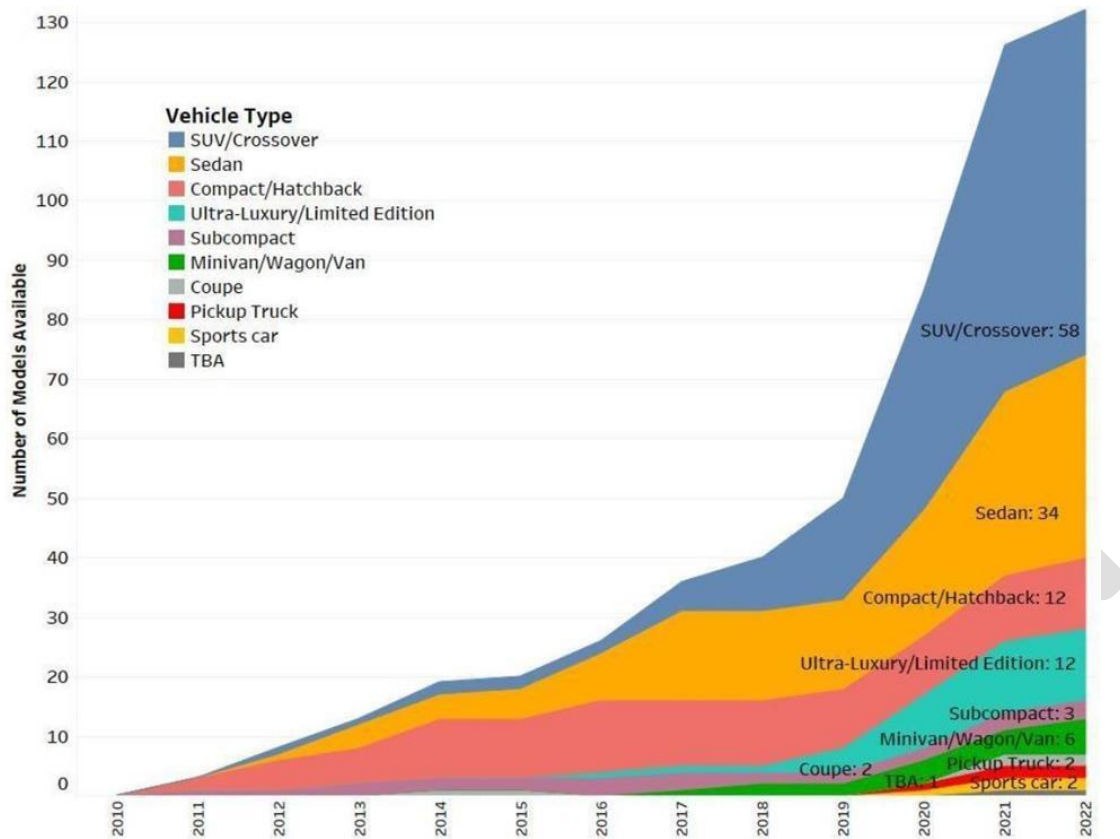
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## APPENDIX 2 - COUNTY FUEL SITES

<u>SITE</u>	<u>LOCATION</u>	<u>FUEL TYPE</u>	<u>HOURS</u>
<u>1<sup>st</sup> Precinct</u>	<u>Route 109 Sunrise Highway Lindenhurst</u>	<u>UNLEADED</u>	<u>24 hours / 7 days</u>
<u>2<sup>nd</sup> Precinct</u>	<u>1071 Park Avenue Huntington</u>	<u>UNLEADED</u>	<u>24 hours / 7 days</u>
<u>3<sup>rd</sup> Precinct</u>	<u>1630 Fifth Avenue Bay Shore</u>	<u>UNLEADED</u>	<u>24 hours / 7 days</u>
<u>5<sup>th</sup> Precinct</u>	<u>125 Waverly Avenue Patchogue</u>	<u>UNLEADED</u>	<u>24 hours / 7 days</u>
<u>7<sup>th</sup> Precinct</u>	<u>1491 William Floyd Parkway Shirley</u>	<u>UNLEADED</u>	<u>24 hours / 7 days</u>
<u>7<sup>th</sup> Precinct - substation</u>	<u>Main Street &amp; Union Avenue Center Moriches</u>	<u>UNLEADED</u>	<u>24 hours / 7 days</u>
<u>Police Marine Bureau</u>	<u>Timber Point Country Club Great River</u>	<u>UNLEADED / DIESEL</u>	<u>24 hours / 7 days</u>
<u>6<sup>th</sup> Precinct</u>	<u>400 Route 25 Selden</u>	<u>UNLEADED</u>	<u>24 hours / 7 days</u>
<u>Special Patrol Bureau Mac Arthur Airport</u>	<u>Ronkonkoma Avenue, Ronkonkoma</u>	<u>UNLEADED</u>	<u>24 hours / 7 days</u>
<u>Bergen Point</u>	<u>600 Bergen Avenue West Babylon</u>	<u>UNLEADED / Bio-DIESEL</u>	<u>6:00AM-6:00PM / 7 days</u>
<u>Hauppauge Fueling Facility</u>	<u>North County Complex Veteran's Highway Hauppauge</u>	<u>UNLEADED / DIESEL</u>	<u>24 hours / 7 days</u>
<u>Yaphank</u>	<u>342 Yaphank Avenue</u>	<u>UNLEADED / DIESEL</u>	<u>24 hour / 7 days</u>
<u>Griffing Avenue</u>	<u>Griffing Avenue Riverhead</u>	<u>UNLEADED</u>	<u>24 hour / 7 days</u>
<u>DPW - Southold</u>	<u>CR 48 - Sound Avenue Peconic</u>	<u>UNLEADED / DIESEL</u>	<u>7:00AM-3:00PM Monday-Friday</u>
<u>DPW - S. Centereach</u>	<u>Nicoll's Road Selden</u>	<u>UNLEADED / DIESEL</u>	<u>7:00AM-3:00PM Monday-Friday</u>
<u>DPW - Commack</u>	<u>CR 13 - 92 Crooked Hill Road Commack</u>	<u>UNLEADED / DIESEL</u>	<u>7:00AM-3:00PM Monday-Friday</u>
<u>Indian Island Park</u>	<u>CR 105 - Cross River Drive Riverhead</u>	<u>UNLEADED / Bio-DIESEL</u>	<u>24 hours / 7 days</u>
<u>DPW - Hampton Bays</u>	<u>Old North Highway CR 39B, Hampton Bays,</u>	<u>DIESEL</u>	<u>7:00AM-3:00PM Monday-Friday</u>
<u>DPW - Westhampton</u>	<u>County Road 31 Westhampton</u>	<u>UNLEADED / DIESEL</u>	<u>7:00AM-3:00PM Monday-Friday</u>
<u>West Sayville Golf Course</u>	<u>Montauk Highway West Sayville</u>	<u>UNLEADED / DIESEL</u>	<u>24 hour / 7 days</u>

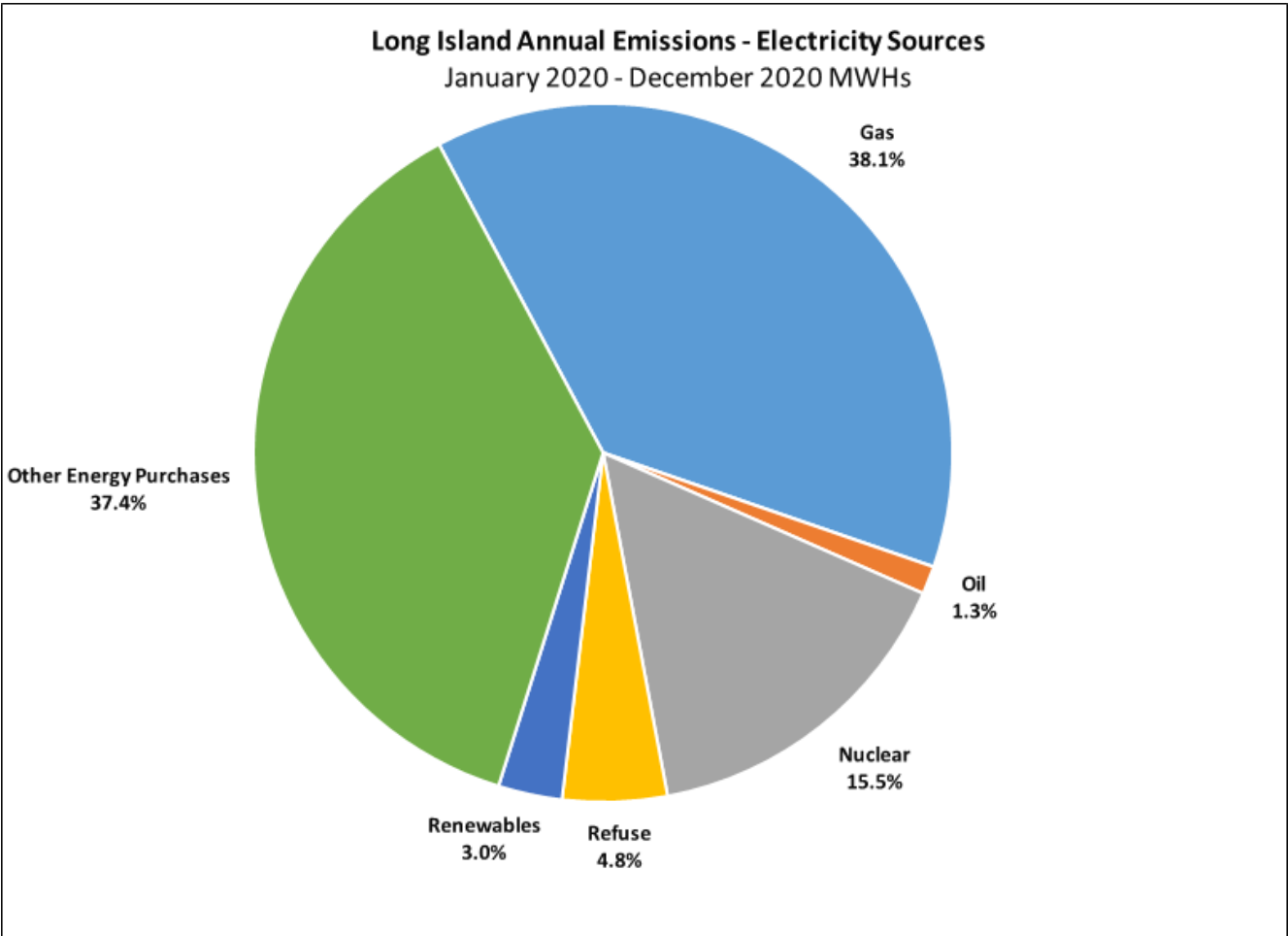
**APPENDIX 3 - COUNT OF EV VEHICLES AVAILABLE**

*Count of EV models available or announced, 2010 – 2022*



Electric Power Research Institute, "Overview of EV Market and PHEV Technology," July 8, 2019.

**APPENDIX 4 - ANNUAL EMISSIONS AVERAGES**



## APPENDIX 5 - VEHICLE WEIGHT CLASSES & CATEGORIES

<u>Gross Vehicle Weight Rating (lbs)</u>	<u>Federal Highway Administration</u>		<u>US Census Bureau</u>
	<u>Vehicle Class</u>	<u>GVWR Category</u>	<u>VIUS Classes</u>
<u>&lt;6,000</u> <u>0</u>	Class 1: <6,000 lbs	<u>Light Duty</u> <u>&lt;10,000 lbs</u>	<u>Light Duty</u> <u>&lt;10,000 lbs</u>
<u>10,000</u> <u>0</u>	Class 2: 6,001–10,000 lbs		
<u>14,000</u> <u>0</u>	Class 3: 10,001–14,000 lbs	<u>Medium Duty</u> <u>10,001–26,000 lbs</u>	<u>Medium Duty</u> <u>10,001–19,500 lbs</u>
<u>16,000</u> <u>0</u>	Class 4: 14,001–16,000 lbs		
<u>19,500</u> <u>0</u>	Class 5: 16,001–19,500 lb		
<u>26,000</u> <u>0</u>	Class 6: 19,501–26,000 lbs	<u>Heavy Duty</u> <u>&gt;26,001 lbs</u>	<u>Light Heavy Duty</u> <u>19,001–26,000 lbs</u>
<u>33,000</u> <u>0</u>	Class 7: 26,001–33,000 lbs		<u>Heavy Duty</u> <u>&gt;26,001 lbs</u>
<u>&gt;33,000</u> <u>0</u>	Class 8: >33,001 lbs		

<u>Gross Vehicle Weight Rating (lbs)</u>	<u>EPA Emissions Classification</u>			
	<u>Heavy Duty Vehicle and Engines</u>			<u>Light Duty Vehicles</u>
	<u>H.D. Trucks</u>	<u>H.D. Engines</u>	<u>General Trucks</u>	<u>Passenger Vehicles</u>
<u>&lt;6,000</u> <u>6,000</u>	<u>Light Duty Truck 1 &amp; 2</u> <u>&lt;6,000 lbs</u>	<u>Light Light Duty Trucks</u> <u>&lt;6,000 lbs</u>	<u>Light Duty Trucks</u> <u>&lt;8,500 lbs</u>	<u>Light Duty Vehicle</u> <u>&lt;8,500 lbs</u>
<u>8,500</u>	<u>Light Duty Truck 3 &amp; 4</u> <u>6,001–8,500 lbs</u>	<u>Heavy Light Duty Trucks</u> <u>6,001–8,500 lbs</u>		
<u>10,000</u>	<u>Heavy Duty Vehicle 2b</u> <u>8,501–10,000 lbs</u>			<u>Medium Duty Passenger Vehicle</u> <u>8,501–10,000 lbs</u>



<u>14,000</u>	Heavy Duty Vehicle 3 10,001–14,000 lbs	Light Duty Engines 8,501 lbs– 19,500 lbs	Heavy Duty Vehicle Heavy Duty Engine >8,500 lbs	
<u>16,000</u>	Heavy Duty Vehicle 4 14,001–16,000 lbs			
<u>19,500</u>	Heavy Duty Vehicle 5 16,001–19,500 lbs			
<u>26,000</u>	Heavy Duty Vehicle 6 19,501–26,000 lbs	Medium Heavy Duty Engines 19,501– 33,000 lbs		
<u>33,000</u>	Heavy Duty Vehicle 7 26,001–33,000 lbs			
<u>60,000</u>	Heavy Duty Vehicle 8a 33,001–60,000 lbs	Heavy Heavy Duty Engines Urban Bus <33,001 lbs		
<u>&gt;60,000</u>	Heavy Duty Vehicle 8b >60,001 lbs			

These charts illustrate the vehicle weight classes and categories used by the Federal Highway Administration (FHWA), the US Census Bureau and the US Environmental Protection Agency (EPA). The vehicle weight classes are defined by FHWA and are used consistently throughout the industry. These classes, 1–8, are based on gross vehicle weight rating (GVWR), the maximum weight of the vehicle, as specified by the manufacturer. GVWR includes total vehicle weight plus fluids, passengers and cargo. FHWA categorizes vehicles as Light-Duty (Class 1–2), Medium-Duty (Class 3–6), and Heavy-Duty (Class 7–8). EPA defines vehicle categories, also by GVWR, for the purposes of emissions and fuel economy certification. EPA classifies vehicles as Light Duty (GVWR < 8,500 lb) or Heavy Duty (GVWR > 8,501 lb). Within the Heavy-Duty class, there is a Medium Heavy Duty Diesel Engine class for engine-only certification, but no Medium-Duty Vehicle class. The September 2011 US Department of Transportation (DOT)/EPA rulemaking on *Greenhouse Gas Emissions Standards and Fuel Efficiency Standards for Medium- and Heavy-Duty Engines and Vehicles* uses categories and weights for Heavy-Duty Vehicle Classes 2b through 8, similar to the FHWA weight classes.

# APPENDIX 6 - NEW YORK STATE CONTRACT PC68451

03/30/2021

ChargePoint Inc

All information provided here is pursuant only to NYS Contract PC68451, and shall be used only in conjunction with use of Contract PC68451 by NYS Authorized Users

## Charging Station Pricing Sheet (Effective 03/30/2021) [see Pricing Notes p.9]

\*\* Freight cost, Duties and applicable taxes added at time of invoicing

### Product Family: CPFS0

Model Number	Level / Application	Mounting Type	Port Output	Cord Length	Cord Management?	List Price	Contract Price (*Does not include freight)
CPFS0-L18	Level 2 / Fleet Use Only	Wall Mount	Single / 11772	18 foot cable	No Cord Management	\$1,500	\$1,200
CPFS0-L18-PEDMNT	Level 2 / Fleet Use Only	Wall Mount	Single / 11772	23 foot cable	No Cord Management	\$1,550	\$1,240
CPFS0-L18-PEDMNT	Level 2 / Fleet Use Only	Bollard Mount	Single / 11772	18 foot cable	No Cord Management	\$2,500	\$2,000
CPFS0-L18-PEDMNT-CMK8	Level 2 / Fleet Use Only	Bollard Mount	Single / 11772	23 foot cable	No Cord Management	\$2,550	\$2,040
CPFS0-L18-PEDMNT-CMK8	Level 2 / Fleet Use Only	Bollard Mount	Single / 11772	18 foot cable	With Cord Management	\$3,130	\$2,504
CPFS0-L18 WALLMNT-CMK8	Level 2 / Fleet Use Only	Bollard Mount	Single / 11772	23 foot cable	With Cord Management	\$3,780	\$3,024
CPFS0-L18 WALLMNT-CMK8	Level 2 / Fleet Use Only	Wall Mount	Single / 11772	18 foot cable	With Cord Management	\$2,630	\$2,104
CPFS0-L18-PEDMNT-Dual	Level 2 / Fleet Use Only	Bollard Mount	Dual / 11772	23 foot cable	With Cord Management	\$3,280	\$2,624
CPFS0-L18-PEDMNT-Dual	Level 2 / Fleet Use Only	Bollard Mount	Dual / 11772	18 foot cable	No Cord Management	\$3,775	\$3,020
CPFS0-L18-PEDMNT-CMK8-Dual	Level 2 / Fleet Use Only	Bollard Mount	Dual / 11772	23 foot cable	No Cord Management	\$3,875	\$3,100
CPFS0-L18-PEDMNT-CMK8-Dual	Level 2 / Fleet Use Only	Bollard Mount	Dual / 11772	18 foot cable	With Cord Management	\$4,655	\$3,724
CPFS0-L18-PEDMNT-CMK8-Dual	Level 2 / Fleet Use Only	Bollard Mount	Dual / 11772	23 foot cable	With Cord Management	\$5,355	\$4,284

### Product Family: CT4000

Model Number	Level / Application	Mounting Type	Port Output	Cord Length	Cord Management?	List Price	Contract Price (*Does not include freight)
CT4001-GW1	Level 2 / Commercial Mixed Use	Bollard Mount	Single / 11772	18 foot cable	With Cord Management	\$5,010	\$4,008
CT4001-GW1	Level 2 / Commercial Mixed Use	Wall Mount	Single / 11772	18 foot cable	With Cord Management	\$5,010	\$4,008
CT4001-GW1	Level 2 / Commercial Mixed Use	Bollard Mount	Dual / 11772	18 foot cable	With Cord Management	\$7,110	\$5,768
CT4002-GW1	Level 2 / Commercial Mixed Use	Wall Mount	Dual / 11772	18 foot cable	With Cord Management	\$7,110	\$5,768
CT4002-GW1	Level 2 / Commercial Mixed Use	Bollard Mount	Dual / 11772	23 foot cable	With Cord Management	\$8,110	\$6,568
CT4002-GW1	Level 2 / Commercial Mixed Use	Wall Mount	Dual / 11772	23 foot cable	With Cord Management	\$8,110	\$6,568

### Product Family: CPZ500

Model Number	Level / Application	Mounting Type	Port Output	Cord Length	Cord Management?	List Price	Contract Price (*Does not include freight)
CPZ500C-425-CCS1-CHD	Up to 62.5 KW DC Fast Charge / Fast Charge / Fleet Use Only	Bollard Mount	Dual / CCS-Combo & CHdeMO, Single user	12.5 foot cable	With Cord Management	\$40,800	\$38,760
CPZ500C-425-CCS1	Up to 62.5 KW DC Fast Charge / Fast Charge / Fleet Use Only	Bollard Mount	Single / CCS-Combo only, Single user	12.5 foot cable	With Cord Management	\$40,800	\$38,760
CPZ500C-425-CCS1-200A-FTA	FTA Buy America Compliant - Up to 62.5 KW DC Fast Charge / Fast Charge / Fleet Use Only	Bollard Mount	Single / CCS-Combo only, Single user	12.5 foot cable	With Cord Management	\$45,900	\$43,605
CPZ500C-425-CCS1-200A-CHD-FTA	FTA Buy America Compliant - Up to 62.5 KW DC Fast Charge / Fast Charge / Fleet Use Only	Bollard Mount	Dual / CCS-Combo & CHdeMO, Single user	12.5 foot cable	With Cord Management	\$45,900	\$43,605

03/30/2021

## Product Family: Express Plus

Model Number	Level / Application	Mounting Type	Port Output	Cord Length	Cord Management?	List Price	Contract Price (Does not include freight)
EXPP-PN-40KW EXPP-PN-40KW-FTA	40 kW Power Module for use in Power Block FTA Buy America Compliant - 40 kW Power Module for use in Power Block	n/a n/a	n/a n/a	n/a n/a	n/a n/a	\$10,000 \$12,900	\$9,500 \$12,255
EXPP-PB1000-XXXA-PD	The Power Block is the physical enclosure for Power Modules. A Power Block can hold up to 5 Power Modules. Power Modules sold separately. EXPP-BLOCK-XXXA-PD is rated for XXXA. The Power Block Mounting Kit (EXPP-BLOCK-CMT) is required but not included.	Ground Mounted.	Up to 2 remote dispensers per Power Block, increased to 8 remote dispensers with Power Hub.	n/a	n/a	\$22,800	\$21,660
EXPP-PB1000-XXXA-PD-FTA	FTA Buy America Compliant - The Power Block is the physical enclosure for Power Modules. A Power Block can hold up to 5 Power Modules. Power Modules sold separately. EXPP-BLOCK-XXXA-PD is rated for XXXA. The Power Block Mounting Kit (EXPP-BLOCK-CMT) is required but not included.	Ground Mounted.	Up to 2 remote dispensers per Power Block, increased to 8 remote dispensers with Power Hub.	n/a	n/a	\$22,800	\$21,660
EXPP-PB1011X-2A1S1	Express Plus Power Link station with single input, 1x 200A CCS1 cable, 1 holster, cable management kit. This station is ground (pedestal) mounted with North American SIM. UL listed. Requires at least one Power Block with Power Modules.	Ground, Wall, Overhead mounting options.	Single / CCS-Combo only, Single User	18 foot cable	With Cord Management	\$13,900	\$13,205
EXPP-PB1021X-2A1S1-2A1S1	Express Plus Power Link station with single input, 2x 200A CCS1 cables, 2 holsters, cable management kit. This station is ground (pedestal) mounted with North American SIM. UL listed. Requires at least one Power Block with Power Modules.	Ground, Wall, Overhead mounting options.	Dual / CCS-Combo only, Dual User	18 foot cable	With Cord Management	\$15,900	\$15,105
EXPP-PB1011X-4A1S1	Express Plus Power Link station with single input, 1x 350A CCS1 cable, 1 holster, cable management kit. This station is ground (pedestal) mounted with North American SIM. UL listed. Requires at least one Power Block with Power Modules.	Ground, Wall, Overhead mounting options.	Single / CCS-Combo only, Single User	18 foot cable	With Cord Management	\$17,900	\$17,005
EXPP-PB1021X-4A1S1-4A1S1	Express Plus Power Link station with single input, 2x 350A CCS1 cables, 2 holsters, cable management kit. This station is ground (pedestal) mounted with North American SIM. UL listed. Requires at least one Power Block with Power Modules.	Ground, Wall, Overhead mounting options.	Dual / CCS-Combo only, Dual User	18 foot cable	With Cord Management	\$21,500	\$20,425
EXPP-PB1021A-4A1S1-2A3S1	Express Plus Power Link station with single input, 1x 350A CCS1 and 1x 200A CHdeMO cables, two holsters, cable management kit, an interactive display and occupancy detector. This station is ground (pedestal) mounted with North American SIM. UL listed. Requires at least one Power Block with Power Modules.	Ground, Wall, Overhead mounting options.	Dual / CCS-Combo and CHdeMO, Dual User	18 foot cable	With Cord Management	\$21,900	\$20,805
EXPP-PB1011X-2A1S1-FTA	FTA Buy America Compliant - Express Plus Power Link station with single input, 1x 200A CCS1 cable, 1 holster, cable management kit. This station is ground (pedestal) mounted with North American SIM. UL listed. Requires at least one Power Block with Power Modules.	Ground, Wall, Overhead mounting options.	Single / CCS-Combo only, Single User	18 foot cable	With Cord Management	\$13,900	\$13,205
EXPP-PB1021X-2A1S1-2A1S1-FTA	FTA Buy America Compliant - Express Plus Power Link station with single input, 2x 200A CCS1 cables, 2 holsters, cable management kit. This station is ground (pedestal) mounted with North American SIM. UL listed. Requires at least one Power Block with Power Modules.	Ground, Wall, Overhead mounting options.	Dual / CCS-Combo only, Dual User	18 foot cable	With Cord Management	\$15,900	\$15,105
EXPP-PB1011X-4A1S1-FTA	FTA Buy America Compliant - Express Plus Power Link station with single input, 1x 350A CCS1 cable, 1 holster, cable management kit. This station is ground (pedestal) mounted with North American SIM. UL listed. Requires at least one Power Block with Power Modules.	Ground, Wall, Overhead mounting options.	Single / CCS-Combo only, Single User	18 foot cable	With Cord Management	\$17,900	\$17,005
EXPP-PB1021X-4A1S1-4A1S1-FTA	FTA Buy America Compliant - Express Plus Power Link station with single input, 2x 350A CCS1 cables, 2 holsters, cable management kit. This station is ground (pedestal) mounted with North American SIM. UL listed. Requires at least one Power Block with Power Modules.	Ground, Wall, Overhead mounting options.	Dual / CCS-Combo only, Dual User	18 foot cable	With Cord Management	\$21,500	\$20,425

## Network Services Pricing Sheet

\* All Network Services require initial Activation Services (see below)  
 \*\* Freight cost, Duties and applicable taxes added at time of invoicing

Applicable Station	Model Number	List Price Per Port	Contract Price Per Port	Subscription Term	Product Description
CPFS0	CPCLD-POWER-1	\$219	\$219	1 Year	Prepaid Power Cloud Plans for Fleets. Includes Secure Network Connection, On-going Station Software updates, Station Inventory, 24x7 Driver Support, Host Support, Session Data and Analytics, Fleet Vehicle Management and Integration, Fleet Access Control, Valet Dashboard, Power Management (Circuit, Panel, Site Sharing), Scheduled Charging, Pricing and Automatic Funds Collection, Valuelist, Videos (on supported hardware).
	CPCLD-POWER-2	\$249	\$249	2 Year	
	CPCLD-POWER-3	\$289	\$289	3 Year	
	CPCLD-POWER-4	\$279	\$279	5 Year	
	CPCLD-POWER-5	\$279	\$279	5 Year	
CPFS0	CPCLD-POWER-10	\$1,749	\$1,749	10 Year	
CT0000	CPCLD-COMMERCIAL-1	\$329	\$329	1 Year	Prepaid Commercial Cloud Plans. Includes Secure Network Connection, On-going Station Software updates, Station Inventory, 24x7 Driver Support, Host Support, Session Data and Analytics, Fleet Vehicle Management and Integration, Fleet Access Control, Valet Dashboard, Power Management (Circuit, Panel, Site Sharing), Scheduled Charging, Pricing and Automatic Funds Collection, Valuelist, Videos (on supported hardware).
	CPCLD-COMMERCIAL-2	\$629	\$629	2 Years	
	CPCLD-COMMERCIAL-3	\$889	\$889	3 Years	
	CPCLD-COMMERCIAL-4	\$1,119	\$1,119	4 Years	
	CPCLD-COMMERCIAL-5	\$1,319	\$1,319	5 Years	
CT0000	CPCLD-COMMERCIAL-10	\$2,638	\$2,638	10 Years	
CPCLD-ENTERPRISE-1	CPCLD-ENTERPRISE-1	\$479	\$479	1 Year	Prepaid Enterprise Cloud Plans. Includes Secure Network Connection, On-going Station Software updates, Station Inventory, 24x7 Driver Support, Host Support, Session Data and Analytics, Fleet Vehicle Management and Integration, Fleet Access Control, Valet Dashboard, Time of Use-varying Power Management (Circuit, Panel, Site Sharing), Scheduled Charging, Pricing and Automatic Funds Collection, Valuelist, Videos (on supported hardware), Meter Data and Advanced Analytics, Building/Energy Management System API, Plug-n-charge (*) Real-Time DC Dynamic Power Management (*), Occupancy Detection (*), Predictive Maintenance and Diagnostics (*), (*) on supported DC stations.
	CPCLD-ENTERPRISE-2	\$509	\$509	2 Year	
	CPCLD-ENTERPRISE-3	\$1,289	\$1,289	3 Year	
	CPCLD-ENTERPRISE-4	\$1,629	\$1,629	4 Year	
	CPCLD-ENTERPRISE-5	\$1,919	\$1,919	5 Year	
CT0000	CPCLD-ENTERPRISE-10	\$3,738	\$3,738	10 Year	
CPFS0	CPCLD-FLEETCOMM-1	\$240	\$240	1 Year	Prepaid Fleet Commercial Cloud Plan. Includes On-going Station Software updates, Network Operations, Station Inventory, 24x7 Driver Support, Host Support, Session Data and Analytics, Fleet Vehicle Management and Integration, Fleet Access Control, Valet Dashboard, Power Management (Circuit, Panel, Site Sharing), Scheduled Charging, Pricing and Automatic Funds Collection for Fleet Users only.
	CPCLD-FLEETCOMM-2	\$500	\$500	2 Year	
	CPCLD-FLEETCOMM-3	\$705	\$705	3 Year	
	CPCLD-FLEETCOMM-4	\$910	\$910	4 Year	
	CPCLD-FLEETCOMM-5	\$1,105	\$1,105	5 Year	
CPFS0	CPCLD-FLEETCOMM-10	\$2,100	\$2,100	10 Year	
CPFS0	CPCLD-ENTERPRISE-DC-1	\$1,199	\$1,199	1 Year	Prepaid DC Enterprise Cloud Plan. Includes Secure Network Connection, On-going Station Software updates, Station Inventory, 24x7 Driver Support, Host Support, Session Data and Analytics, Fleet Vehicle Management and Integration, Fleet Access Control, Valet Dashboard, Time of Use-varying Power Management (Circuit, Panel, Site Sharing), Scheduled Charging, Pricing and Automatic Funds Collection for Fleet Users, Meter Data and Advanced Analytics, Building/Energy Management System API, Plug-n-charge (*) Real-Time DC Dynamic Power Management (*), Occupancy Detection (*), Predictive Maintenance and Diagnostics (*), (*) on supported DC stations.
	CPCLD-ENTERPRISE-DC-2	\$2,279	\$2,279	2 Years	
	CPCLD-ENTERPRISE-DC-3	\$3,259	\$3,259	3 Years	
	CPCLD-ENTERPRISE-DC-4	\$4,079	\$4,079	4 Years	
	CPCLD-ENTERPRISE-DC-5	\$4,799	\$4,799	5 Years	
CPFS0	CPCLD-ENTERPRISE-DC-10	\$9,589	\$9,589	10 Years	
CPFS0	CPCLD-FLEET-DC-1	\$800	\$800	1 Year	Prepaid DC Fleet Enterprise Cloud Plan. Includes On-going Station Software updates, Network Operations, Station Inventory, 24x7 Driver Support, Host Support, Session Data and Analytics, Fleet Vehicle Management and Integration, Fleet Access Control, Valet Dashboard, Time of Use-varying Power Management (Circuit, Panel, Site Sharing), Scheduled Charging, Pricing and Automatic Funds Collection for Fleet Users, Meter Data and Advanced Analytics, Building/Energy Management System integration, Plug-n-charge (*), Real-Time DC Dynamic Power Management (*), Occupancy Detection (*), Predictive Maintenance and Diagnostics (*), (*) on supported hardware.
	CPCLD-FLEET-DC-2	\$1,390	\$1,390	2 Years	
	CPCLD-FLEET-DC-3	\$2,420	\$2,420	3 Years	
	CPCLD-FLEET-DC-4	\$3,120	\$3,120	4 Years	
	CPCLD-FLEET-DC-5	\$3,790	\$3,790	5 Years	
CPFS0	CPCLD-FLEET-DC-10	\$7,200	\$7,200	10 Years	
CPFS0	CPCLD-WMP-1	\$500	\$500	1 Year	Fleet Application Only - Vehicle Management Pro cloud plan. Includes vehicle charging data and analytics, business payment methods for on-route charging, API integrations with customer systems, and depot workflow and charging optimization Requires 1 WMP-SETUP per site.
	CPCLD-WMP-2	\$100	\$100	2 Years	
	CPCLD-WMP-3	\$1,500	\$1,500	3 Years	
	CPCLD-WMP-4	\$2,000	\$2,000	4 Years	
	CPCLD-WMP-5	\$2,500	\$2,500	5 Years	
**All Network Services require initial Activation Services					
Applicable Stations	Product Name	List Price	Contract Price		Product Description
CPFS0	OPF-ACTIVE	\$100 per station	\$100 per station		Fleet Application Only - Initial Station Activation & Configuration Service - Activation of cloud services and configuration of radio groups, custom groups, connections, access control, visibility control, pricing, reports and alerts. One time initial service per port.
CT00000, CPFSXX	OPFSUPPORT-ACTIVE	\$349 per station	\$349 per station		Initial Station Activation & Configuration Service includes activation of cloud services and configuration of radio groups, custom groups, connections, access control, visibility control, pricing, reports and alerts. One time initial service per station.
CPCLD-WMP	CPCLD-WMP-SETUP	\$8000 per Site	\$8000 per Site		Vehicle Management Pro Cloud plan. Includes fleet operations workflow and charging analysis, optimization modeling and consulting. Includes configuring depot and vehicle parameters, user-roles, notifications, and alerts in vehicle management software. Also includes testing, training, and go-live support, as well as up to 8 alerts in vehicle management software.
CPCLD-WMP	CPCLD-WMP-SETUP-INTEGRATION	\$8000 per integration.	\$8000 per integration.		Vehicle Management Pro cloud plan. Includes fleet operations workflow and charging analysis, optimization modeling and consulting. Includes configuring depot and vehicle parameters, user-roles, notifications, and alerts in vehicle management software. Also includes testing, training, and go-live support, as well as up to 8 alerts in vehicle management software.

## Assure Maintenance Pricing Sheet

\* All Assure plans require successful Site Validation (see below)  
 \*\* Freight cost, duties and applicable taxes added at time of invoicing

Applicable Stations	Model Number	List Price Per Part (a) for dual port stations	Contract Price Per Part (a) for dual port stations	Plan Term	Product Description
CPF50	CPF-ASUIRE1	\$200	\$200	\$200 1 proptic year of Assure	ChargePoint Assure for CPF50 Parts and On-Site Labor to repair or replace any manufacturing defect. Includes station management, remote monitoring of station and proactive repair dispatch. A successful site validation is required to activate any ChargePoint Assure product.
CPF50	CPF-ASUIRE2	\$370	\$370	\$370 2 proptic year of Assure	
CPF50	CPF-ASUIRE3	\$510	\$510	\$510 3 proptic year of Assure	
CPF50	CPF-ASUIRE4	\$660	\$660	\$660 4 proptic year of Assure	
CPF50	CPF-ASUIRE5	\$870	\$870	\$870 5 proptic year of Assure	
CPF50	CPF-ASUIRE10	\$1,250	\$1,250	\$1,250 10 proptic year of Assure	
CT4000	CT4000-ASUIRE1	\$740	\$740	\$740 1 proptic year of Assure	ChargePoint Assure for the CT4000 Parts and On-Site Labor to repair or replace any manufacturing defect. Includes station management, remote monitoring of station and proactive repair dispatch. A successful site validation is required to activate any ChargePoint Assure product.
CT4000	CT4000-ASUIRE2	\$1,410	\$1,410	\$1,410 2 proptic year of Assure	
CT4000	CT4000-ASUIRE3	\$2,080	\$2,080	\$2,080 3 proptic year of Assure	
CT4000	CT4000-ASUIRE4	\$2,460	\$2,460	\$2,460 4 proptic year of Assure	
CT4000	CT4000-ASUIRE5	\$2,490	\$2,490	\$2,490 5 proptic year of Assure	
CT4000	CT4000-ASUIRE10	\$4,990	\$4,990	\$4,990 10 proptic year of Assure	
CFE120	CFE120-ASUIRE-1	\$4,300	\$4,300	\$4,300 1 proptic year of Assure	ChargePoint Assure for ChargePoint Express 120 Parts and On-Site Labor to repair or replace any manufacturing defect. Includes station management, remote monitoring of station and proactive repair dispatch. A successful site validation is required to activate any ChargePoint Assure product.
CFE120	CFE120-ASUIRE-2	\$5,000	\$5,000	\$5,000 2 proptic year of Assure	
CFE120	CFE120-ASUIRE-3	\$11,100	\$11,100	\$11,100 3 proptic year of Assure	
CFE120	CFE120-ASUIRE-4	\$13,600	\$13,600	\$13,600 4 proptic year of Assure	
CFE120	CFE120-ASUIRE-5	\$13,300	\$13,300	\$13,300 5 proptic year of Assure	
CFE120	CFE120-ASUIRE-10	\$23,000	\$23,000	\$23,000 10 proptic year of Assure	
Express Plus	EXP-AL000-ASUIRE-1	\$1,300	\$1,300	\$1,300 1 proptic year of Assure	ChargePoint Assure for ChargePoint EXP-AL000 Parts and On-Site Labor to repair or replace any manufacturing defect. Includes station management, remote monitoring of station and proactive repair dispatch. A successful site validation is required to activate any ChargePoint Assure product.
Express Plus	EXP-AL000-ASUIRE-2	\$1,660	\$1,660	\$1,660 2 proptic year of Assure	
Express Plus	EXP-AL000-ASUIRE-3	\$19,860	\$19,860	\$19,860 3 proptic year of Assure	
Express Plus	EXP-AL000-ASUIRE-4	\$23,640	\$23,640	\$23,640 4 proptic year of Assure	
Express Plus	EXP-AL000-ASUIRE-5	\$30,950	\$30,950	\$30,950 5 proptic year of Assure	
Express Plus	EXP-AL1000-ASUIRE-1	\$1,890	\$1,890	\$1,890 1 proptic year of Assure	ChargePoint Assure for ChargePoint Dual Cable EXP-AL1000 Parts and On-Site Labor to repair or replace any manufacturing defect. Includes station management, remote monitoring of station and proactive repair dispatch. A successful site validation is required to activate any ChargePoint Assure product.
Express Plus	EXP-AL1000-ASUIRE-2	\$3,660	\$3,660	\$3,660 2 proptic year of Assure	
Express Plus	EXP-AL1000-ASUIRE-3	\$5,210	\$5,210	\$5,210 3 proptic year of Assure	
Express Plus	EXP-AL1000-ASUIRE-4	\$6,710	\$6,710	\$6,710 4 proptic year of Assure	
Express Plus	EXP-AL1000-ASUIRE-5	\$8,110	\$8,110	\$8,110 5 proptic year of Assure	

Validation Services			Product Name		Unit Price	Contract Price	Product Description	* All Aspire plans require successful site validation
All Stations Except C4120	C4100PORT-SITVALD	\$599 per site	\$599 per site	On-site validation for a customer not using an OEM Partner or self-validating Channel Partner to perform the construction and station installation, used to validate the installation has been performed per ChargePoint published requirements. The on-site validation consists of checking electrical capacity, transformers, panels, breakers, wiring, cellular coverage and that station installation meets all ChargePoint published requirements and local codes. C4100-INSTALLVALD is priced per C41000 station. A successful site validation is initiated within 150 feet of each other. A successful site validation is a prerequisite to purchase ChargePoint Aspire. C4100PORT-SITVALD is priced for up to 3 stations that exist within the same 150 foot group of stations.				
	C41000-INSTALLVALD	\$1,300 per station	\$1,300 per station	Customer works with their own contractor to perform the sit construction to the point where the stations can be bolted down and connected. ChargePoint will engage one of their OEM Partners to install the station on the prepared site and validation of electrical capacity, transformers, panels, breakers, wiring, cellular coverage and that station installation meets all ChargePoint published requirements and local codes. C41000-INSTALLVALD is priced per C41000 station. A successful site validation is a prerequisite to purchase ChargePoint Aspire.				
	C41200-SITVALD	\$600 Per Station	\$600 Per Station	Customer works with their own contractor to perform the construction and station installation. CPE4120-SITVALD is used to validate that a customer installation has been performed per ChargePoint published requirements. The on-site validation of electrical capacity, transformers, panels, breakers, wiring, cellular coverage and that the station installation meets all ChargePoint published requirements and local codes. A successful site validation is a prerequisite to purchase ChargePoint Aspire.				
	C41200-INSTALLVALD	\$1,300 per station	\$1,300 per station	Customer works with their own contractor to perform the sit construction to the point where the stations can be bolted down and connected. ChargePoint will engage one of their OEM Partners to install the station on the prepared site and validation of electrical capacity, transformers, panels, breakers, wiring, cellular coverage and that station installation meets all ChargePoint published requirements and local codes. INSTALLVALD is priced per C41200 station. A successful site validation is a prerequisite to purchase ChargePoint Aspire.				
	C41200-INSTALLVALD	\$1,300 per station	\$1,300 per station	Customer works with their own contractor to perform the sit construction to the point where the stations can be bolted down and connected. ChargePoint will engage one of their OEM Partners to install the station on the prepared site and validation of electrical capacity, transformers, panels, breakers, wiring, cellular coverage and that station installation meets all ChargePoint published requirements and local codes. INSTALLVALD is priced per C41200 station. A successful site validation is a prerequisite to purchase ChargePoint Aspire.				
C41200	C41200-INSTALLVALD	\$1,300 per station	\$1,300 per station	Customer works with their own contractor to perform the sit construction to the point where the stations can be bolted down and connected. ChargePoint will engage one of their OEM Partners to install the station on the prepared site and validation of electrical capacity, transformers, panels, breakers, wiring, cellular coverage and that station installation meets all ChargePoint published requirements and local codes. A successful site validation is a prerequisite to purchase ChargePoint Aspire. CPE4120-INSTALLVALD is priced per CPE4120 station (Not applicable for Express Plus installations).				
CPE4120	CPE4120-NEW-PAIRED-INSTALLVALD	\$7000 per pair (2 stations)	\$7000 per pair (2 stations)	For a new CPE4120 paired installation, the CPE4120-NEW-PAIRED-INSTALLVALD will have a ChargePoint OEM Partner install both CPE4120 stations for pairing and, if needed, the OEM Partner will provide the construction and installation of the stations. ChargePoint will provide the ChargePoint Aspire Partner with the ChargePoint site for the new paired CPE4120 installation as defined in the site prep guide and to all local codes and is priced for 1 paired installation (2 stations).				
All Stations	PARTNER-SELFVALD	\$0 per site	\$0 per site	Customer works directly with a self-validating Channel Partner where the Channel Partner will be performing the construction and station installation per plan. These services include on-site validation of electrical capacity, transformers, panels, breakers, wiring, cellular coverage and that the station installation meets all ChargePoint published requirements and local codes. A site is defined as a group of stations all connected to the same gateway station. The name of the self-validating partner must be indicated on the Channel Partner's purchase order. Enhanced Aspire Warranty will only become effective after the self-validating Partner has confirmed completion of the site validation. A successful site validation is a prerequisite to purchase ChargePoint Aspire.				



## Accessories Pricing Sheet

\* Freight cost, Duties and applicable taxes added at time of invoicing

Applicable Station	Model Number	List Price Each	Contract Price Each	Product Description
CPF50	CPGW1-LTE	\$0	\$0	The ChargePoint Gateway provides connectivity for CPF50 to ChargePoint's Cloud via a cell to Wi-Fi modem. One gateway can provide connectivity up-to 9 CPF50 ports that are within 150 feet line of sight of the gateway. A gateway must be ordered for a new site, or if the site exceeds more than 9 ports, or if the CPF25/CPF50 is installed more than 150 feet from the existing gateway.
CPF50	CPF50-Power Share Kit	\$0	\$0	CPF50 Power Management Kit. Allows both stations on a dual station to share a single 40A circuit (Power Share). Also allows a CPF50 to be set up to operate at a lower current (Power Select).
CT4000	CT4000-PMGMT	\$50	\$50	CT4000 Power Management Kit. Allows both ports on a dual port station to share a single 40A circuit (Power Share). Also allows a CT4000 to be set up to operate at a lower current (Power Select).
CT4000	CT4001-CCM	\$95	\$95	CT4000 Bollard Concrete Mounting Kit. Bolts: 5/8 - 11 x 9" F1554 Grade 55 hot-dipped galvanized threaded bolts - 3 ea. Nuts: 5/8 - Heavy Galvanized Hex Nuts (DH Rated) - 12 ea. Washers: Galvanized Washers (ASTM F436) - 9 ea. Plastic Template - 1 ea
CPE250 and Plus	CPE250-CMT-IMPERIAL	\$0	\$0	Concrete Mounting Template used for the base mounting for the CPE250 and Express Plus Stations and is used to align conduits and mounting bolts. This template is to be installed into the foundation before the concrete pad is poured. Imperial Units. Included with the CPE250. Required for CPE200 swap to CPE250. If replacement CMT is needed, order CPE250-CMT-IMPERIAL-RP
CPE250 and Plus	CPE250-CMT-IMPERIAL-RP	\$799	\$799	Concrete Mounting Template used for the base mounting for the CPE250 and Express Plus Stations is used to align conduits and mounting bolts. This template is to be installed into the foundation before the concrete pad is poured. Imperial Units. Included with the CPE250. Required for CPE200 swap to CPE250. If replacement CMT is needed, order CPE250-CMT-IMPERIAL-RP
CPE250 and Plus	DC-UNIVERSAL-CMT-METRIC	\$0	\$0	Required metal bracket to align conduits and mounting bolts for DC power delivery products when cable entrance is from below. This bracket is to be installed into the foundation before the concrete pad is poured. Metric Units. Required for CPE250 and PDD series.
CPE250	CPE250-PAIRINGKIT-F	\$500	\$500	The kit required for each CPE250 station that is to be installed in a paired configuration. One kit per station.
CPE250	CPE250C-625-ENABLE	\$5,000	\$5,000	Enable upgrade for Express 250 to increase max power from 50 KW to 62.5 KW.
CPE250	CPE250-4/0LUGS-F	\$0	\$0	4/0 T&B lugs used in pairing of CPE250. Includes 4 lugs per pack. One pack per station
CPE250	CPE250-3/0LUGS-F	\$0	\$0	3/0 T&B lugs used in pairing of CPE250. Includes 4 lugs per pack. One pack per station
CPE250	CPE250-SCEK-METRIC	\$3,650	\$3,650	The CPE250-SCEK-METRIC provides access to the CPE250 for above ground conduit installations. Includes base and replacement panels.

Express Plus	EXPP-BLOCK-CMT	\$799	\$799	Metal bracket required for proper alignment of conduits and bolt locations for positioning CP Express Power Block. Required for Power Block. Power Block sold separately.
Express Plus	EXPP-PB1000-CMT	\$0	\$0	Metal bracket required for proper alignment of conduits and bolt locations for positioning CP Express Power
Express Plus	EXPP-PH0041-200A	\$4,000	\$4,000	Express Plus Power Hub, NA version, ground mounted, and supports 4 Express Plus Power Link stations and is rated for 200 amps. The Express Plus Power Hub is required when connecting more than 2 Power Link stations to a Power Block.

**Pricing Notes**

Quoting should be handled by an authorized ChargePoint representative to guarantee all stations, products and services selected will meet the needs of the Sourcewell member and operate as expected. For building estimated project pricing refer to the notes below.

- 1) Read All Notes Marked with "\*" On Each Page
- 2) All Stations Require cellular gateways based on site layout.
- 3) All Stations Require Network Services per port.
- 4) All Stations require Initial Activation Services.
- 5) All Station Installations Require Successful Site Validation to enable ChargePoint Assure warranty.
- 6) All Prices in US Dollars.
- 7) All stations require adequate, ambient 4G cell connectivity in accordance with applicable ChargePoint installation guide.
- 8) Freight costs, applicable taxes and duties added at time of invoicing.



**COUNTY OF SUFFOLK**



**OFFICE OF THE COUNTY EXECUTIVE**

**Steven Bellone**  
COUNTY EXECUTIVE

**EXECUTIVE ORDER NO. 1-2021**

To: Joseph Brown, P.E., Commissioner of Public Works

From: Steven Bellone, County Executive of Suffolk County

Re: **PRIORITIZATION OF SUFFOLK COUNTY GOVERNMENT'S  
ENVIRONMENTAL SUSTAINABILITY EFFORTS- FLEET VEHICLES**

WHEREAS, Suffolk County is committed to investing in efforts to counter climate change effects by reducing greenhouse gas and air pollution; and

WHEREAS, Suffolk County strives to take every action within its power to improve the health of all its residents and visitors, and has been awarded the Silver Level in the Climate Smart Communities program; and

WHEREAS, improving the air quality and countering the effects of climate change are critical steps to improving the health and well-being of Suffolk County residents and visitors; and

WHEREAS, in 2005, Suffolk County became the first municipality on Long Island to adopt a Clean Energy Action Plan that documented the County's planned efforts to reduce energy consumption and greenhouse gas (GHG) emissions from county operations and facilities; and

WHEREAS, in 2015 Suffolk County adopted a Climate Action Plan (CAP) which focuses primarily on climate change mitigation and energy efficiency measures within Suffolk County; and

WHEREAS, the use of electric vehicles in lieu of vehicles that run solely off of fossil fuels is critical to the County's effort; and

WHEREAS, Suffolk County Government is desirous of taking steps to transition its vehicle fleet to all electric vehicles.

THEREFORE, pursuant to Sections 3-2, 3-3, 3-4 and 4-2 of the Suffolk County Charter, I HEREBY DIRECT THE DEPARTMENT OF PUBLIC WORKS to:

1. Prepare a plan on the feasibility of converting all of its fleet vehicles, owned or leased from fuel operated to electric vehicles and the necessary infrastructure to support transition to

electric vehicles including the siting of electric vehicle charging stations in Suffolk County parking lots and other Suffolk County municipal facilities.

2. The Department of Public Works shall collaborate with any other Suffolk County department that has County fleet vehicles on the preparation of said plan.
3. The plan should consider the possibility of cooperative procurement opportunities with other municipalities in light of Suffolk County's shared services goals.
4. The Department of Public Works shall provide the completed plan to the Office of the County Executive no later than ninety (90) days from the date of this Order.
5. This Executive Order shall take effect immediately.

Dated: May 10, 2021



Steven Bellone  
County Executive of Suffolk County

cc: Lisa Black, Chief Deputy County Executive  
Jason Elan, Deputy County Executive  
Stephanie Rubio, Acting Director of the Office of Budget Review  
Amy Ellis, Clerk of the Legislature  
Sarah Simpson, Office of Legislative Counsel  
Dennis M. Cohen, County Attorney  
Lynne Bizzarro, Chief Deputy County Attorney  
Joseph Brown, Commissioner of Department of Public Works